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U. S. Embargo On Russian Pulpwood Is Lifted

Seymour Lowman, Assistant Secretary of the Treasury Revises Decision After Hearings Which Failed To Show Conclusively That the Pulpwood Held Up Had Been Produced by Convict Labor—International Paper Co. Issues Statement Explaining That Its Contracts Were Entered Into In Good Faith

[FROM OUR REGULAR CORRESPONDENT]

WASHINGTON, D. C., August 4, 1930.—The embargo against the importation of Russian pulpwood from the Archangel district was raised by the Treasury Department late Friday afternoon on the ground that evidence adduced in hearings held by Seymour Lowman, Assistant Secretary of the Treasury, had failed conclusively to prove that the pulpwood was produced by convict labor.

Mr. Lowman announced that he had revoked the embargo, and Friday night sent the following telegram to the Collectors of Customs at New York, Boston, Bangor, Me., Ogdensburg, N. Y., and St. Albans, Vt.

"Instructions in my telegram of July 25 rejecting the entry of pulpwood cargoes from Archangel hereby revoked."

The change of front of the government came after Mr. Lowman had conducted another hearing Friday, during which a renewed plea for reconsideration of the embargo and strong statements of the embargo's effect on the news print industry were presented by representatives of the Amtorg Trading Corporation, the International Paper Company and shipping lines handling the cargoes from Russia.

Statement by Mr. Lowman

Mr. Lowman made the following statement:

"Some days ago the treasury was advised that several vessels loaded with pulpwood had arrived in this country from Archangel.

"Section 307 of the tariff act of 1930 prohibits the importation of goods, wares, articles and merchandise produced wholly or in part in any foreign country by convict labor, and in view of the fact that certain information had been given indicating that the pulpwood may have been produced by convict labor in a foreign country the cargoes have been denied entry pending a determination as to whether the pulpwood had been so produced.

"Hearings were held but the evidence adduced was conflicting and inconclusive, and has not been found to be sufficient to establish the fact that the pulpwood was produced by convict labor. Accordingly the Treasury Department has issued instructions to the collectors of customs that the detained shipment may be permitted entry.

"It may be stated in this connection that the Treasury Department intends to enforce strictly the provisions of Section 307 of the tariff act of 1930 prohibiting entry to any goods, wares, articles or merchandise mined, produced or manufactured, wholly or in part, in any foreign country by convict labor."

Order Applies to Uncut Wood

The action of the Treasury Department in the pulpwood situation was similar to that recently taken with respect to lumber. Shipments of lumber from Russia had been ordered barred, but after a hearing, at which no conclusive proof was presented that convict labor was used in the production of the lumber, collectors of customs were instructed to admit the shipments.

It was at first understood after the order of revocation was issued that it applied only to pulpwood on ships in American ports, on the high seas or loaded and loading at Archangel. Later, after Colonel Kenneth Gardner, representing the American shipping interests, had conferred with Mr. Lowman, it was stated that all pulpwood now in Archangel, whether "cut" or "loading," would also be admitted.

Colonel Gardner said that he considered the decision of the treasury a complete victory for his clients. Inasmuch as the treasury had been unable to obtain conclusive evidence that the Russian pulpwood had been produced by convict labor, he said all of it could now enter the United States. With respect to pulpwood cut in the future, he declared it would be necessary for the government to make a showing of convict production before such pulpwood could be barred.

As on Tuesday, testimony was given at today's hearing that convict labor had not been used in producing or loading the pulpwood shipped to this country.

The manufacturers and shippers protesting the original treasury ruling made their chief fight for an order raising the embargo to permit the entry of some forty shiploads held up in American ports, on the way here, or about to be loaded at Archangel, the chief Russian port for export of pulpwood.

Alfred Leeds Leaves Westfield River

[FROM OUR REGULAR CORRESPONDENT]

SPRINGFIELD, Mass., August 5, 1930.—Alfred Leeds, wellknown paper manufacturer, for the past four or five years president of the Westfield River Paper Company at Russell has resigned greatly to the regret of the board of directors. Prior to that he had been treasurer of the Worthy Paper Company for eight years. Before that he had been successfully connected with other paper making concerns. The company has had a thriving business under his direction and now employs 75 men.

Demand for Paper Broadening In Philadelphia

While Many Local Distributors Are Experiencing Busier Times Than In Corresponding Period Last Year, Profits Have Been Reduced to Minimum—Manufacturers of Specialty Papers More Active—Book Paper Situation Shows Marked Improvement

[FROM OUR REGULAR CORRESPONDENT]

PHILADELPHIA, Pa., August 4, 1930.—Though the paper markets have been broadening in so far as local distribution is concerned, there have been deep cuts into profits as competition extends and orders are more eagerly sought by the dealers and mill representatives. Many dealers state that while they are able to sell more paper they cannot make the money that they could a year ago owing to this marking of profits to the minimum. Distributors of fine paper state they have been able to make better terms on purchases of many lines now listed by the mills, as the heat interferes with broader business. Manufacturers of specialty papers state they have been more active.

Among the grades of paper that show the results of competitive bidding for orders where mills have met their patrons' needs are sulphite manilas which are now marked at 3½ cents f.o.b. mill; bogus papers are off 20 cents per hundred and rosin sized sheathing is also down 20 cents per hundred. Krafts are securer at the prices to which they were advanced a month or so ago and are in better demand. Southern krafts continue to lead in orders. Tissues are improved, particularly sanitary grades, which are still subjected to competitive price structures that make inroads on profits. Towels, drinking cups, outing supplies, soda fountain and ice cream specialties, parchments, waxed papers, glassines and allied paper commodities are being absorbed by the consuming trades more freely.

A marked improvement has taken place among the book paper dealers where a quieter trend has been noted since several New York publishers took to publishing books at $1 and created a disturbing influence on the local printing and publishing field. For the past ten days book paper orders have been more frequent though still showing uncertainty in the lack of volume ordinarily bought at this season under contract for three to six months terms. Publishers in this city have been loath to place volume orders owing to the prospects of warfare over the $1 books and have been cautiously waiting to see the effects of such a cut on the literary world and the industry as a result of the lower prices for books that ordinarily sell from $2 to $3. Supplies now bought are for immediate future needs only.

Paper Concerns To Move

With the completion of the combination warehousing, shipping and office building which is to be built on the Pennsylvania Railroad siding and along the Reading Railroad approach to the center city there will be removed to its environs three large paper houses with the early autumn. The new structure is unique of its kind and will be known as the Terminal Commerce Building located in the heart of the city a short distance from the main approach to the Delaware Bridge and at the corner of Callowhill and Broad streets with a frontage on Vine street and on North 13th street adjacent to the two leading railroads that lead to the central city station within sight of City Hall. This unique structure will be sixteen stories high and will have the most modern of offices, telephone and elevator services, connecting with its shipping platforms, garages and ware rooms all assembled in a single mammoth building. The garage and shipping platforms will accommodate over 600 automobiles and will give direct shipping facilities from ware rooms to the railroads. Offices and ware rooms will be on a single floor of several thousand square feet in area. Prominent paper dealers who will occupy the premises when completed in October are the D. L. Ward Company, long established at 28 South 6th street, the Charles Beck Paper Company, for more than 75 years devoted to the sale of fine paper and specialties, now at 609 Chestnut street, and the Eastern Paper Company, which is a wholesale paper dealing concern and specializes in flat and converted products for schools and educational institutions. The D. L. Ward and Beck Paper companies will occupy the third floor while the Eastern Paper Company will have the fifth.

Philadelphia Paper Men Attend Board Convention

Leading manufacturers of corrugated paper products and containers in the Quaker City trade journeyed to the Metropolis last week to attend the convention of the Paperboard Industries Association held at the Commodore Hotel July 22 and 23 and joined in the social and business sessions held during the two days' meeting. Those from the local trade who attended were John M. O'Connor, Philadelphia manager of the Fibreboard Products, Inc., with headquarters in San Francisco; David Weber, of the David Weber Company; T. C. Mitchell, of the Federal Container Company, recently consolidated with the Fibreboard Products Corporation; William Jefferies, Crescent Corrugated Products Company; and Albert Light, head of the Corrugated Container Company. All these concerns are engaged in the production and conversion of corrugated products in this city and operate large plants.

Corrugated Fibre Boxes Discussed

Local paper men in the corrugated paper industries were summoned before the interstate Commerce Commission Classification Committee at its meeting held on July 14, 15 and 16 at the Hotel Champlain, Bluff Point, Lake Champlain, when the matter of corrugated and fiber board box classification was propounded by those experienced in the traffic branch of the industry. Those who were summoned to the hearing were John M. O'Connor, Philadelphia manager for Fibreboard Products, Inc.; Secretary Carpenter, of the Kieckhefer Container Company, and Traffic Manager Mooney, of David Lupton's Sons Company, who use extensively these coverings for their products. The meeting of the classification committee was devoted to the discussion of Subject 321 of Rule 41 which is up for hearing on adjustment and modification of fiber board and corrugated box classification.

Package Sealing Products Controlled by Bachelder

With the acquisition of the stock formerly owned by his associate in the business, George Green, now taken over by G. H. Bachelder, the controlling interest in the Package Sealing Products Company is in the hands of the latter who is continuing the business at 770 South Schuylkill avenue. The firm, which has been organized for the past year and a half, is devoted to the manufacture of sealing tapes, gummed kraft and gummed cloths. The firm is also distributor for the sealing machines manufactured by the Perfection Package Sealer Company, Cleveland, Ohio. The present head of the firm was formerly Philadelphia manager for the Nashua Gum and Coated Paper Company, resigning his position with that firm to open his own plant. The firm has a well equipped plant for the manufacture of gummed products and sealing tapes.

Local Distributors at Box Makers Convention

Members of the Philadelphia trade who specialize in papers used by the box manufacturers were among the associates of the Central Division of the National Paper Box Manufacturers Association who attended the annual convention held at the Mountain

Spring Hotel, in Reading, July 23 and 24. Among those present from the local paper industry and associate members of the Supply Association of the National Box Manufacturers Association were: Howard Marcus, and Louis Schulman, of A. S. Datz and Son, 16 South Marshall street, and their associates on the sales staff, Joseph Maerz, James Regin, Eastern Sales travelling representative and Thomas Convery, southern representative; Walter Matthias, Matthias & Freeman Company; Philip Rudolph and Roger Wood, Philip Rudolph Company; Howard Schafer and Manager Crane of the sales division of the Container Corporation of America; Carl Nyholm, A. Hartung, Inc., and William Bollenbeck of Louis De Jonge & Co. Officers elected to the body were: Lester A. Dorn, New York, reelected president, and George F. Nuss, of the Otto Nuss Company, Philadelphia, vice chairman. Members of the Advisory Board are Gideon R. Kreider, Jr., Lebanon, Pa.; E. W. Gilbert, Allentown, Pa.; Frank Stone, Philadelphia, and Paul B. Gordon, Baltimore. George J. Kroeck, president of the National Paper Box Association, presided at the meetings.

Rising Products Featured by Lindsay Paper Co.

Attractive and complete sample lists of the products of the Rising Paper Company, Housatonic, Mass., have been compiled by the Lindsay Paper Company and are being sent from headquarters at 804 Sansom street, to consumers and dealers. The new samplers include book papers, cover papers, bonds and writing papers made by the Rising Company. The Lindsay Paper Company is Philadelphia distributor for the lines. The firm is putting out a new line called Persia Oriental, a distinctive paper in white and pastel shades for cover and announcement stocks. It is a novelty paper with a thread running through the sheets, and is produced by the Carew Manufacturing Company, of Holyoke, Mass.

Lindsay Paper Co. Manufacturing Blotters

A line of high grade blotting papers is being produced under the name of the Lindsay Paper Company, with headquarters and sales offices at 804 Sansom street and mill established in Wilmington. These blotters are now ready for the market and are on an especially strong and absorbent grade of blotting paper produced in white only. They will be distributed through the local paper house and made in the Delaware metropolis.

E. Latimer, Jr., Produces Die Wiping Specialty

E. Latimer, Jr., 126 North 4th street, is now producing under his own label a die wiping paper of unusual strength called the Hercules. The die wipe paper is of high finish kraft with extensive yardage and strong texture. It will work with all inks, a good quality that makes it especially appealing to engravers and greeting card manufacturers. This better grade of die wiping paper is the leader of the firm although it produces a second grade die wipe called No. 1 Kraft Die Wipe which is cheaper in price.

Japan Paper Co. Imports New Lines

New importations from across the seas have been high lighted by the Japan Paper Company, Philadelphia offices in the Witherspoon Building, under management of Warwick C. Miller. While President R. T. Stevens is now in Europe seeking other new lines of papers to add this Fall, the Quaker City sales offices are showing the latest arrivals from England, France and Italy. They include new cards and envelopes to match, adapted for greeting cards and announcements produced by paper makers in England and France in a variety of colors of brilliant hues with a modern creation of English cover stocks and announcements in hand made antique finish of five colors, beige, gold, fawn, dove and Van-Dyke and an entirely late development of Italian hand made cover paper.

Miss Miriam Clair Returns to Progressive Paper Co.

Miss Miriam Clair, who was formerly associated with her brothers, Harry A. and Samuel Clair, in the business of the Progressive Paper Company, 134 North Delaware Avenue, has returned to take up her association with the company again after a year's absence in Seattle, Washington. Miss Clair has been spending the year with her mother, Mrs. Minnie Waxman, in the far West. She will join the concern as its secretary.

William R. Maull Returns to Dill & Collins Co.

Following an absence of several weeks from his duties as vice president and general manager of the Dill Collins Paper Company, Richmond street, William R. Maull is again able to be at his desk. He was confined to the Chester County Hospital for an operation for appendicitis and recovered in a short time and has been spending the past fortnight at the seashore recuperating.

Fred Hastings Touring New England

Fred Hastings, manager of the Philadelphia offices of the American Writing Paper Company, Bourse Building, is touring through New England and stopping off at Holyoke to attend the annual sales convention of the fine paper manufacturing concerns, to be held this month.

Clark H. Morian Back From Fishing Trip

After a three weeks sojourn in Nova Scotia, Clark H. Morian, vice president and general sales manager of the Cherry River Paper Company, Pennsylvania Building, is again at his desk. While in the Canadian coast region he spent much of his time on a fishing trip making record hauls of large size fish that abound in the waters of the northern resort.

Butler Smythe in Maine

Butler Smythe, president of the J. L. N. Smythe Paper Company, 30 South 6th street, and vice president of the Paper Trade Association, is now on a tour of the Maine Coast, spending two weeks in the rounds of the resorts of the northern state.

American Writing Salesmen Meet

HOLYOKE, Mass., August 5, 1930.—The annual sales conference of the salesmen of the American Writing Paper Company, Inc., was held last week, about 75 salesmen from all over the country attending. The conference opened in the Highland Park Community House Thursday morning with addresses by President S. L. Willson, and Leon M. Yoerg, Russell S. Madden and R. D. W. Ewing, all vice Presidents of the company.

President Willson gave a survey of the market conditions; Mr. Roerg on manufacturing conditions; the merchants sales policy was discussed by Mr. Madden; Mr. Ewing gave an analysis of accounts and R. B. McDougall assistant general sales manager spoke on the various lines carried by the company.

Discussions on busines papers and book and cover papers were led by A. C. Lamb, A. P. Janes and J. J. Wallace department heads Alexander Forbes, R. F. Linsert and John Owen spoke various phases of the sales promotion program. Dinner was served at the Hotel Nonotuck.

Speakers Friday included Miss Helen U. Kiely of the department of technical control, Charles G. Neidel, F. A. Curtis and Elioct M. Newhall. A clam bake was held at Pearl City in the afternoon. Saturday was golfing day and the salesmen were given the freedom of the Mt. Tom Golf club course.

Power Plant at Ticonderoga Burned

TICONDEROGA, N. Y., August 4, 1930.—The power plant of the International Paper Company was this week destroyed by fire originating from generator trouble. The building was a wooden structure and had been operated twenty-four hours daily. The power plant was used principaly in supplying energy to the Ticonderoga Pulp and Paper Company, a subsidary of International, and it is understood that it will be rebuilt. The loss was placed at $25,000. The destruction of the building is not interfering with operations at the paper mill as it was learned that all arrangements had been made to secure operating power from another source.

Northern Paper Mills New Earnings Increase

Green Bay Organization and Its Subsidiaries Make Highly Satisfactory Record For First Half of Year—Earnings Were 30 Per Cent Higher Than In Corresponding Period of Preceding Year—Sales Five Per Cent Larger Than In 1929

[FROM OUR REGULAR CORRESPONDENT]

APPLETON, Wis., August 4, 1930.—With a gain of five per cent in sales and thirty per cent in net earnings, the Northern Paper Mills, Green Bay, Wis., and its subsidiaries, showed a highly satisfactory record for the first half of 1930 in the face of general conditions. The financial position of the company is now practically the best in its history.

Earnings for the first six months of 1930 were $244,368.39, as against $187,439.49 for the corresponding period of 1929, according to reports submitted to the board of directors at a meeting last week. These figures are net after all overhead, depreciation and taxes. The earnings figure out $2.93 a share for common stock, after deducting for dividends on preferred stock. Dividends on common have been paid at the rate of 50 cents per share per quarter, and the current sales prices of the stock are about $40 per share.

While the increase of 30 per cent in earnings is reflected in part in the sales gain of 5 per cent, the extensive capital improvements made in the last few years have done their share. The company built two large power dams, removed obsolete machinery from the mill and added buildings and other equipment for more extensive capacity with economy. The savings in operating costs are beginning to reflect themselves in the company's statements, and also have helped to place the sales organization in a better position with regard to competition.

Corporations in the Northern group are: Northern Paper Mills and Northern Electric Company, Green Bay, Wis.; Tuttle Press Company, Appleton, Wis.; Paper Service Company, Chicago; Patten Timber Company, the Cloverland Supply Company, and General Paper Mills, Inc., Amasa, Mich., and Northern Paper Mills, Ltd., Coppell, Ontario.

John L. Barchard Optimistic

Much improved conditions for the last half of 1930 are seen by John L. Barchard, president of the Hummel & Downing Company, Milwaukee, one of the largest manufacturers of paper containers in this section. Withering corporation reports will not be a true picture of the coming months, he said. There will be a larger volume of production and an improvement in employment. The Hummel & Downing Company has been operating at 83 per cent of capacity but expects to be on a full capacity basis soon.

New Boiler Plant for Stevens Point

Construction work has been completed on a new building for the Stevens Point Pulp and Paper Company, Stevens Point, Wis. The building is 40 by 60 feet in size and two stories high. It is built of concrete and steel. The building will house new boilers and other equipment by means of which operating costs will be reduced. The company is making extensive alterations in its chemical department so as to modernize all the facilities. This company is a subsidiary of the John Strange Paper Company, Neenah, Wis.

Escanaba to Make Wall Paper

Alterations will be made at the mills of the Escanaba Paper Company, Escanaba, Mich., preparatory to the manufacture of wall paper on a ten-year contract just closed with the United Wall Paper Company and Sears, Roebuck & Co., according to announcement of Joseph H. Slater, manager.

News print manufacture will be discontinued entirely on the No. 1 machine and it will be altered so as to produce wall paper on a full capacity basis. The No. 2 machine will continue on news print production, however. New beaters, stuff chests, refining engines and screens will be installed at once, together with a winder drive and slitter. New motors are to be installed in the pulp mill and other changes made so as to increase the capacity. The company also is building an addition to the mill to house sizing and chemical equipment necessary for wall paper. About $50,000 will be spent on the mechanical changes. Under the new arrangements, the company is assured of production at full capacity for the next ten years.

News Print Freight Rates

Continual agitation on the part of railroads operating in Wisconsin appears to be opening the way for a revision in freight rates on news print and a change in the basic method of computing rates. The railways have filed briefs with the Interstate Commerce Commission asking these specific changes when the general news print rate investigation is begun after August 1.

At the present time the basis of rate making for Wisconsin cities is the decision of the I. C. C. in the Minnesota and Ontario Paper Company case of 1922. All other rates on paper are based on the news print rate, book and wrapping being 110 per cent of news print, and toilet and writing 133 per cent. The railroads call this a "frozen set up" and as now constituted means that one rate cannot be changed without applying the change to all others. It is also contended that rates from all Wisconsin groups are based on rates adopted for mills of the Fox River Valley, and changes there would mean changes in all other groups.

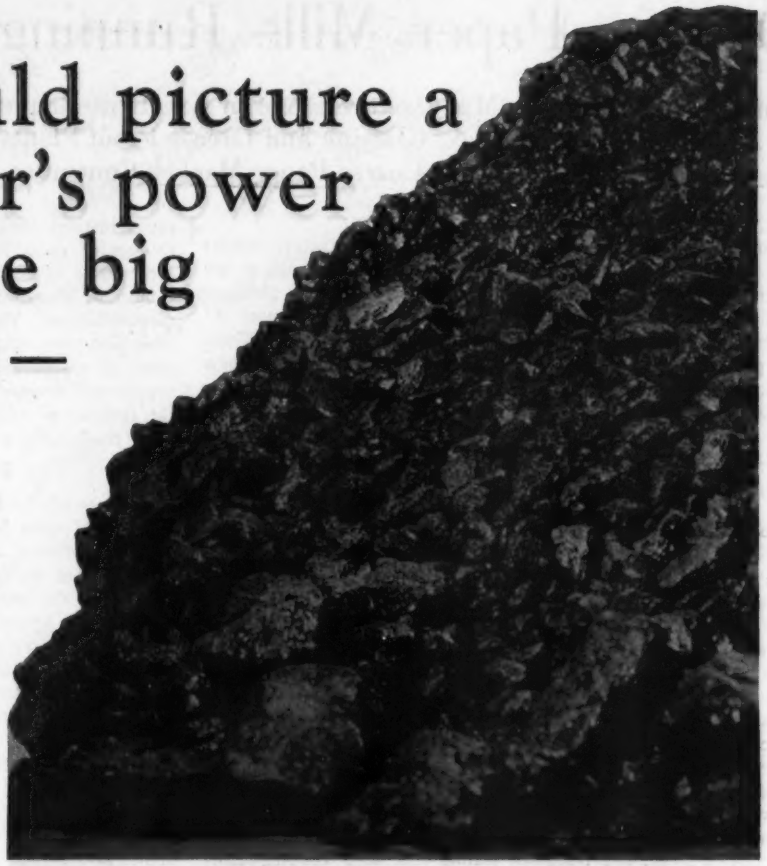
Railroads therefore have proposed a general scale of rates which they want to apply to all producing territories in Wisconsin, upper Michigan and Minnesota. The scale is said to be below a normal maximum, but they are willing to accept it if other territories will. The roads also agree to consolidate paper group A (news print and blank wall paper), with group B (printing, book and wraping paper), to straighten out the tangled percentage rating. In doing this they will sacrifice their 10 per cent advantage on group B paper products, but hope to make it up by the general increase they seek in group A. The railroads state further that Wisconsin should have higher rates because conditions are far less favorable from a density standpoint here than in other sections of the country.

In another rate case now before the Interstate Commerce Commission, the Ann Arbor Railroad objects to reopening hearings on behalf of the United Paperboard Company at the latter's request. This action was wanted after a rate of 18.5 cents was prescribed on woodpulp board from Ontenagon, Mich., to Menasha, Wis. In the United-Ann Arbor case, a rate of 20 cents was fixed from Urbana, Ohio, to Chicago, Ill., which is a 15-mile longer haul than the Michigan-Wisconsin case. The railroad contends that the best test of reasonableness is a comparison with rates in the same territory, where transportation conditions are the same.

Oberweiser Heads Whiting-Plover

E. A. Oberweiser has been elected president of the Whiting-Plover Paper Company, Stevens Point, Wis., to succeed the late George A. Whiting, its founder. The vacancy on the board of directors has been filled by the election of George Hilton, of Oshkosh, Wis., a member of the law firm of Bouck, Hilton, Kluwin & Dempsey. Frank B. Whiting continues as vice-president, Mr. Hilton is elected secretary, and Mr. Obertweiser retains the office of treasurer. J.H. Miller is manager of the mill. Mr. Oberweiser has been the active head of the company for 22 years.

If you could picture a whole year's power loss in one big coal pile—



you'd never disregard it

Every pound of fibre and every gallon of water that leaves your mill carries part of your coal pile with it. A small part, true enough. But a big slice of the pile if you figure it for a whole year. There's the power you've used to prepare the fibre and pump and perhaps heat the water. But . . . away it goes to the sewer.

• • •

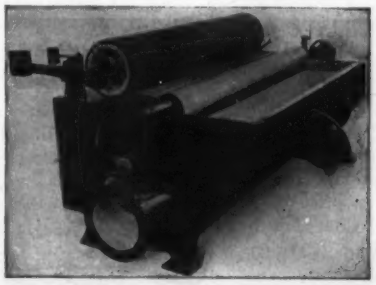
It carries more than power. It carries fibre—fibre that belongs in your paper. And it carries filler and solubles that have cost you good money.

• • •

If you could stop that white water from going to the sewer, would you do it? Other mills are doing it, and eliminating all that waste. *You* can do it—with the Bird Closed System.

• • •

The Bird Closed System is built around an entirely new idea on the handling of white water: the Save-All is given the prominence it deserves as an essential link in the operation of each paper machine. Each paper



making unit has its own white water system.

• • •

Simple, the Bird Closed System requires no elaborate equipment. The Bird Save-All, the heart of the system, has been carefully re-designed to give high operating efficiency with the greatest economy and low first cost. Bird Save-Alls already installed can be easily modernized.

• • •

The Bird Closed System is a *proved* system. It is the closed system you have been looking for. Let us give you the whole story, with a detailed flow diagram which presents the System as it works out in a typical mill. Write today for the facts. Bird Machine Company, South Walpole, Massachusetts.

BIRD CLOSED SYSTEM

4214

Ontario Paper Mills Running Near Capacity

Products of Fine Paper Manufacturers Are In Excellent Request—Lively Demand Experienced For Coated Stock—Wax, Glassine and Grease Proof Plants Working On Restricted Schedules—Coarse Paper Market Continues Dull

[FROM OUR REGULAR CORRESPONDENT]

TORONTO, Ont., August 4, 1930.—Whatever the future results that may accrue from the defeat of the King Government at the recent Dominion elections, the paper trade generally is glad the conflict is over. The consensus of opinion is that the paper industry and most other lines are going to benefit materially through the putting into effect of certain fiscal policies to which the new Conservative Government is pledged in the way of protection to home industries and in any event the way is now open for expansion by paper consuming concerns who had been waiting to see which political party was to control the country's affairs. The conflict has been raging for a couple of months and it has had an unsettling effect on trade generally and the pulp and paper industry was no exception to the rule. The full effect of the change in government will not be felt for some time, of course, but the point is that industry generally knows now where it stands in respect to tariff protection and expansion plans can now go ahead.

In the meantime a fair amount of business is being done in both the wholesale and manufacturing sections of the paper trade, although it must be said that some of the plants are working on greatly reduced schedules. One Ontario paper manufacturing concern is only operating three days a week, their specialty being cover stock, tags and blanks. On the other hand, book paper mills and fine paper plants as a whole are running fairly close to capacity and are finding ready sale for their products. A feature of the fine paper trade just now is the excellent demand for coated stock, one big plant stating that their coating plants are running close to capacity without piling up stock. The call for waxing, glassine and grease proof lines is light just now and the wholesale end of the light weight paper market is inclined to be draggy, with sales of tissues, toilets and tissue specialty lines generally rather small. On the other hand the mill trade in this department is keeping up well. The coarse paper market is still somewhat dead and there is a draggy tendency in the paper converting trade with the exception of envelopes, manufacturers of which are fairly busy. The paper plants are still running light and the paper box industry is seasonably dull.

Speculation As to News Print

In the light of the wide market interest in the securities of the Canadian news print producers, the possible action of publishers after the termination of existing contracts at a price of $55.25 is being awaited with considerable interest. Contrary to expectations in some quarters officials in a position to gauge the trend of events state emphatically that they see no reason for an advance in price during 1930. The publishers, in fact, are determined, it is claimed, to resist to the utmost any tendency along these lines. There are, it is pointed out, two ways in which the publishers can resist any move towards establishment by news print mills of higher prices for their product. They can reduce their purchases from Institute companies to a minimum, and extra supplies of news print can be bought from sources outside Canada. Some producers and banking interests in Canada show an inclination to make light of recent moves on the part of the publishers and look upon them as empty threats pointing to the undoubted superiority in quality of Eastern Canada news print. It is believed, however, by some observers, that the fact that news print produced in Ontario and Quebec is considered the most satisfactory in the world will not prove a deterrent to the purchase of inferior grades at distant points, provided the cause justifies the action. In this regard it is pointed out that sources of news print other than those of Institute companies are capable of being increased, Alaska, Norway, Sweden, British Columbia, Newfoundland and New Brunswick being referred to as possibilities. That there is a desire to pool interests becomes more and more evident as time goes by, but even with a stronger spirit of co-operation between producers prevailing, the law of supply and demand must rule. When demand catches up with the supplies on hand, then only will the Canadian mills begin to show the benefits of the national industry.

Freight Rate Relief Sought

Students of the freight rate problem are emphatic in declaring some relief must be given the northeast Canada paper box and carton producers in the near future that will allow them to compete with the manufacturers of the central and western provinces for the business of these territories. It is pointed out that, as the present rate structure exists, the eastern producer has little prospect of penetrating the western and central demand because of the formidable transportation costs. However, the central manufacturers can very comfortably compete with the eastern manufacturers for the business of the east. This is due to the rates being lower from the central provinces to the east than vice versa. Some of the paper box men would be satisfied if they were given an even break on their home market, which includes the provinces of New Brunswick, Nova Scotia, Prince Edward Island, and the colony of Newfoundland. The West Indies also form a market for the eastern box men, which might be called a subsidiary of the home market, because the sea provinces are the nearest part of the Dominion to the British islands to the south. Failing in the effort now being made to equalize the rates, both directions, it is felt that the rates from east to west are due for a cut. This would allow the eastern manufacturers a better opportunity to ship west and make a profit. Under the transportation costs that have prevailed, it has been difficult to send paper boxes and cartons west at a worth while profit.

History of Paper in Canada

For some years past George Carruthers, president of the Interlake Tissue Mills, Ltd., and past president of the Canadian Pulp and Paper Association, has been compiling data in connection with the Canadian paper industry during the nineteenth century. He has gotten his material to a point now when it will soon be possible to issue a book on the subject which should be a valuable addition to the literature on the pulp and paper industry. Mr. Carruthers is absent in Europe just now and in the meantime the work he started and has carried on so long is being continued by competent officials connected with the Canadian Pulp and Paper Association.

Notes and Jottings of the Trade

The Toronto office of the Howard Smith Paper Mills have sent out a neat sample case containing samples of the first Railroad board made in Canada for Canadian printers who require a selection of brilliant colors combined with excellent working qualities on the press. The board is being manufactured at the Cornwall, Ont., plant of the company and is available from paper dealers throughout Canada.

A raft of peeled pulpwood, 3,800 cords, the most valued raft of wood ever towed on northern Canadian waters, and valued at $45,000, was brought into Port Arthur, Ont., a few days ago in

WRITE YOUR NAME AND ADDRESS ON THE MARGIN OF THIS PAGE AND MAIL IT TO US FOR A CATALOG

A news mill repaid the cost of its Downingtown Suction Roll installation at the end of seven months. They installed two rolls in 1925, therefore the rolls have paid dividends for more than four years, and are still running. The design and construction of the Downingtown Roll safeguards the economies derived from the suction roll operating principle. A complete 24 page catalog sent upon request.

Downingtown Manufacturing Co.
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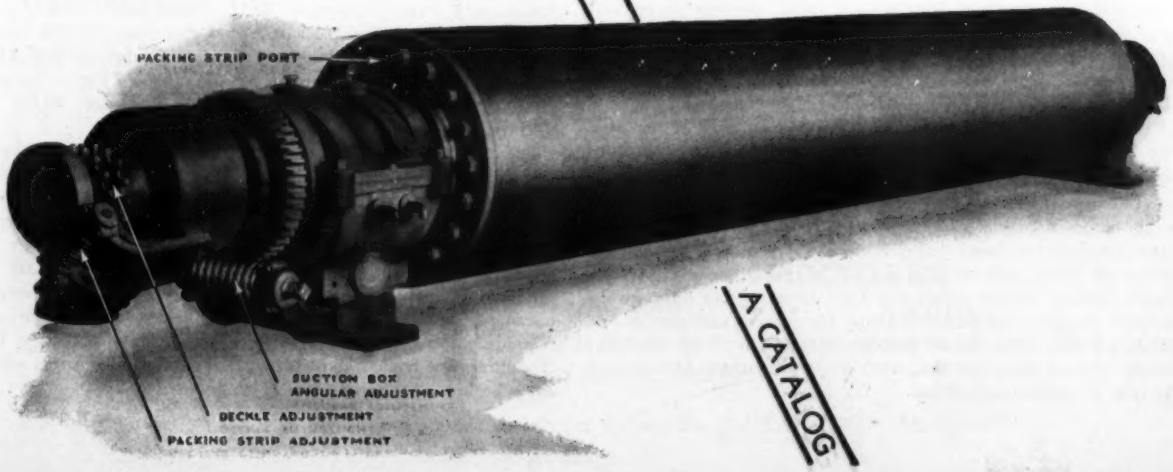
KILBERRY PATENT
SUCTION ROLL



tow of the tug A. B. Conmee. The wood will be stored in booms at Port Arthur until loaded for transportation to the United States.

J. H. Black, former vice-president and general manager of the Spruce Falls Power and Paper Company, was waited upon by the staff of the head office in Toronto a few days ago and presented with a handsome travelling bag. Mr. Black recently resigned his position with the Spruce Falls Company to accept the position of assistant to the president of the Abitibi Power and Paper Company, with special jurisdiction over the company's power development. The presentation was made by George Barber, who recently succeeded to the office of treasurer and who has been made a director.

A recent visitor to Toronto and a number of the wholesale paper firms was Sir William Dudley, of the Co-operative Wholesale Society, Ltd., the headquarters of which are at Manchester, England. Sir William and a number of the members of his executive staff are visiting Canada with the object of making arrangements for their purchases direct from manufacturers within the Empire.

W. E. Lavan has been appointed mill manager at the Spruce Falls Power and Paper Company's plant at Kapauskasing, Ont., in succession to E. S. Noble, who has been appointed general manager in place of J. H. Black resigned. Mr. Lavan was formerly secretary to Mr. Noble while the latter occupied the position of manager at Kapauskasing.

J. E. Patterson, manager of operations for the Abitibi Power and Paper Company, has returned to Toronto after a tour of the company's plants at Sault Ste. Marie, Port Arthur, Port William and Pine Falls.

E. B. McMillan, of the Hampden Glazed Paper and Card Company, Holyoke, Mass., was a recent business visitor in Toronto.

The Don Valley Paper Company, Toronto, has just sent out to paper wholesalers all over Canada a neatly done up sample book of their Donvale Covers in a wide range of finishes, weights and shades.

A number of Toronto paper merchants participated in a golf match at Fonthill, Ont., a few days ago, between Toronto and Buffalo Typothetaes. The game was an annual one between the two organizations for possession of a cup donated by W. H. Brigden, Toronto, and C. Spendelow, of Buffalo, both ex-presidents of their respective Typothetaes. The match was won by the Toronto players and the cup will now be moved from Buffalo to Toronto.

The Thunder Bay and Fort William mills of the Abitibi Power and Paper Company are now operating on a sixty per cent production basis and will continue to do so until September, according to G. E. Patterson, manager of operations. Mr. Patterson says that the company is hopeful of increasing production in September in both the Port Arthur and Port William mills as contracts are expected to be closed for considerable news print between now and then.

Recently the Steamer *Reliance* brought another large raft containing 2,500 cords of box wood assembled at Manitoulin, Ont., for Firstbrooks, Toronto manufacturers of wooden and paper boxes. The *Reliance* also took another large raft of Glanville pulpwood, containing 3,500 cords of spruce and balsam destined for the Abitibi Power and Paper Company at the Soo. The Thessalon River has every bit of space taken up with pulpwood as far as the eye can see.

Activity characterizes the Abitibi research department just now to an extent never before experienced. Improvements in the manufacturing processes have been developed and special attention is being paid to the use of fibers from other woods besides spruce. Paper companies have been cutting only spruce in their logging operations leaving the other varieties of fir standing. It is now found possible to mix the fibres of other woods, such as pine, and this results in a substantial lowering of the cost of woods operations.

Obituary

Sigmund Goldman

Sigmund Goldman, president of the English China Clays Sales Corporation, New York, since its formation ten years ago, and one of the most widely known and highly respected figures in the paper and pulp industry, died at his home, 910 West End Avenue, New York, Saturday, July 26, aged sixty-two years.

Mr. Goldman was born in California and educated at Monroe, Mich. He started his career in the pulp industry by acting as U. S. agent of the Hamburg house of pulp exporters, A. Wertheim & Co., with headquarters in New York. He afterwards served in the pulp department of Atterbury Bros., New York, for several years.

Following this Mr. Goldman spent a quarter of a century in the pulp and china clay department of the Perkins-Goodwin Company, New York, leaving to join the English China Clays Sales Corporation.

He was a former president of the Association of American Wood Pulp Importers nad was chairman for several years of the Joint Committee on Approved Pulp Testing Chemists for the Paper Industry of the United States. He was also a member of the National Panel of the American Arbitrators Association and a life member of King Solomon Lodge, No. 279, F. & A. M.

Mr. Goldman leaves a widow, Mrs. Belle Goldman, a son, Louis, and two daughters, Nanon and Muriel. Funeral services were held on Tuesday, July 29, at the Universal Chapel, Lexington Avenue, New York.

Charles B. Brooksbank

PHILADELPHIA, Pa., July 31, 1930.—The Philadelphia headquarters of the Cherry River Paper Company, Pennsylvania Building, announce the passing of Charles Bertrand Brooksbank, manager of the Richwood, Va., mills of the company, whose death followed an operation for appendicitis, on July 20. Mr. Brooksbank passed away at the Richwood Hospital where he had been removed for an operation necessitated by an acute attack of appendicitis. He was 55 years of age. He had been associated with the Richwood mills of the Cherry River Paper Company for 25 years, having been manager for several years prior to his death. Surviving him are his widow and two sons Charles B. Brooksbank, Jr., and Gardner P. Brooksbank, both associated with the Richwood mills of the company. Interment was made in the Monument Cemetery on July 23 at Beverly N. J., in the family plot.

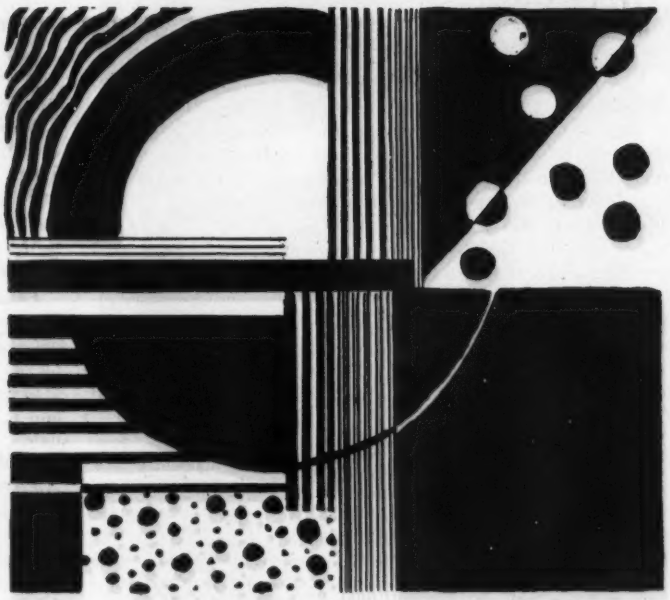
News of the Wisconsin Industry

Tolls amounting to $52,956 have been assessed to various companies in Wisconsin for the use of dam sites by the Wisconsin Railroad Commission. Most of this money is paid by paper mills, among which the larger ones are: Consolidated Water Power and Paper Company, $5,113, Rhinelander Paper Company, $1,428, Tomahawk Kraft Paper Company, $2,650. Grandfather Falls Company, $3,577, Wausau Paper Mills, $2,450, Marathon Paper Mills Company, $2,903, Mosinee Paper Company, $2,723, Wisconsin River Paper and Pulp Company, $3,010, and Nekoosa-Edwards Paper Company, $7,398.

The tug Butterfield of the Newaygo Tug Line, owned by the Consolidated Water Power and Paper Company has completed its second successful trip rafting pulp wood across Lake Superior from Canadian points to Ashland, Wis., where it is reloaded on flat cars and distributed to the company's mills. The raft contained about 12,000 cords of spruce logs valued at $125,000.

Alfred Fallman, an employe of the Escanaba Paper Company, Escanaba, Mich., was fatally injured while working with the crew rebuilding the company's devastated power dam at Boney Falls. He suffered a triple pelvic fracture and internal injuries when a cable broke.

WITCO



PARIS BLACK

Quality in the ascendant . . . service which backs up the excellence of the product . . . these are worthwhile advantages which users of Witco Paris Black enjoy.

Papermakers jealous of the reputation of their production will find this Paris Black an aid in maintaining high standards.

An added profit factor is the Witco position of first hands in the industry.

BUY DIRECT AND PROFIT DIRECTLY

WISHNICK-TUMPEER, Inc.

MANUFACTURERS AND IMPORTERS

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WITCO owned and operated: Century Carbon Co. and The Pioneer Asphalt Co.

CONSTRUCTION NEWS

A Summary of Vital Facts Regarding Construction, Finances and Operation of Paper Mills

Construction News

Middletown, Ohio—The Sorg Paper Company, Middletown, has approved plans for the immediate construction of a new addition to its mill and has let general contract to Morton L. Bauer, Middletown. The unit will be one-story, 100 x 325 feet, and is reported to cost over $100,000, with equipment.

Philadelphia, Pa.—The Container Corporation of America, Inc., Nixon and Fountain streets, manufacturer of corrugated paper boxes and containers, has filed plans for the construction of a new addition to local branch plant, to be one-story, estimated to cost close to $25,000. It will be used primarily for storage and distributing service. General building contract has been let to the Hughes-Foulkrod Company, Schaff Building, Philadelphia. Headquarters of the company are at 111 West Washington Street, Chicago, Ill.

Baltimore, Md.—The Hinde & Dauch Paper Company, Sandusky, Ohio, has begun the construction of a proposed new plant on East Biddle street, Baltimore, for the manufacture of corrugated paper shipping containers, to be one-story, 240 x 480 feet, with adjoining units, including a two-story office structure. The entire plant is reported to cost close to $300,000, with machinery. As recently reported in these columns, Otto Randolph, Inc., 53 West Jackson Boulevard, Chicago, Ill., is architect, engineer and contractor. The company is now operating in a building at North Haven Street and Fairmount Avenue, Baltimore, and which branch will be removed on completion of new plant.

Kennett Square, Pa.—Following the recent purchase of the Rogers Fibre Company, Kennebunk, Me., by the Fibre Specialty Manufacturing Company, Kennett Square, the latter company is arranging to concentrate considerable production at the Kennett Square plant, and a number of specialties heretofore produced by the Rogers company will be manufactured at this plant. It is understood that increased production will be carried out. The Rogers plant at Spartanburg, S. C., will be continued as a branch plant, as heretofore, and John Rogers, manager at that location, will be in charge. Leon B. Rogers will become associated with the organization of the purchasing company at the Kennett Square plant.

Wilmington, Ill.—The Orenda Corporation, Wilmington, is said to be planning the early rebuilding of portion of local paper mill, destroyed by fire July 26, with loss approximating $100,000. with machinery. Reconstruction is expected to cost close to a like sum. Company headquarters are at West Forty-fourth Street and Oakley Avenue, Chicago, Ill.

Mobile, Ala.—Officials of the International Paper Company, 220 East 42nd street, New York, have organized the Continental Paper & Bag Corporation, under Alabama laws, to manufacture paper bags, in connection with kraft paper production of the parent company. The new company will occupy a portion of the present mill of the International company at Mobile, and considerable new equipment has been installed for bag manufacture. It is understood that extensive output is planned giving employment to more than 350 additional operatives at the mill.

Neenah, Wis.—The Kimberly-Clark Corporation, North Commercial Street, Neenah, has asked bids on general contract for a new addition to its local Lakeview mill, consisting of a two-story and a one-story unit, 60 x 150 feet and 50 x 60 feet, respectively, to be used for pulp storage and as a machine shop, in the order noted. The expansion is reported to cost more than $75,000. Company engineering department is in charge.

Panama City, Fla.—The Southern Kraft Paper Company, Panama City, recently organized as a subsidiary of the International Paper Company, New York, has active work under way on the first unit of its proposed new plant at Panama City, where a large tract of land has been secured. Land is being cleared and it is expected to begin building superstructures at an early date. The mill will be built so as to allow for additional units to double initial capacity without interruption in production at a later date. The entire project is estimated to cost over $5,000,000. The Brackin Construction Company, Mobile, Ala., has contract for land clearing.

Evansville, Wis.—The paper storage building of Eugene Williams on Mill street, was recently destroyed by fire. An official estimate of loss has not been announced.

Cloquet, Minn.—The Northwest Paper Company, Cloquet, has begun steel frame super-structure for its new mill unit, consisting of a one-story building, 125 x 725 feet, and will follow at an early date with mason work. The new structure will be used for expansion in the machine, beater, and finishing department as well as pulp storage, reported to cost over $500,000. General contract is being handled by the Jame Leck Company, 211 South Eleventh Street, Minneapolis, Minn. The Jacobson Engineering Company, Plymouth Building, Minneapolis, is engineer for the project.

Waterville, Me.—The Keyes Fibre Company is said to have plans under way for the construction of a new addition to its mill and will provide additional equipment for increased output.

St. Louis, Mo.—The building occupied by the Coudy Envelope Company at 215 Pine street, was damaged by fire recently with loss reported at close to $15,000. It is understood that the company will replace its portion of fire damage at once.

Wisconsin Rapids, Wis.—The Consolidated Water Power and Paper Company, Wisconsin Rapids, will proceed with the construction of a new addition to its mill, for which plans were recently approved by the state, consisting of a two-story building, 75 x 108 feet, and four one-story units, to be 14 x 122 feet, 27 x 56 feet, 19 x 32 feet and 25 x 28 feet, respectively. The project is reported to cost over $100,000, and will be carried out by day labor. An award for structural steel has been let to the Wisconsin Bridge and Iron Company, Milwaukee, Wis.

Detroit, Mich.—The Tullar Envelope Company, 2766 West Fort street, has filed plans for the construction of a new addition to its plant for increased capacity, reported to cost over $40,000, with equipment. A general building for the unit has

UNDER THE NIROSTA STAR

New Exhibit Room and Offices of Krupp Nirosta Company, Inc.

Modern as today is the gleaming star of Nirosta Metal which lights the exhibit room of the new Krupp Nirosta Company headquarters in suite 2638 New York Central Building, New York.

Modern as today is Nirosta Metal itself—perfected chrome nickel alloy steel which brings to the industrial world the answer to problems which have defied metallurgists through the ages.

Two years of proved success here and ten abroad are behind Nirosta Metal. You are invited to learn how it can work and save for you, and to view the suggestive display in our exhibit room. Krupp Nirosta Company, Inc., 2638 New York Central Building, New York.

Nirosta Metal—superlative in its qualities of workability and immunity to corrosion—is produced only by these licensed companies:

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AMERICAN FORGE CO.
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FIRTH-STERLING STEEL CO.
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LUDLUM STEEL COMPANY
LUKENS STEEL CO.
MICHIANA PRODUCTS CORP.
MILWAUKEE STEEL FOUNDRY CO.
MONARCH FOUNDRY CO.
MORRIS & BAILEY, (DIVISION OLIVER IRON & STEEL CORP.)
NEWTON STEEL CO.
OHIO SEAMLESS TUBE CO.
PACIFIC FOUNDRY CO.
PENNSYLVANIA FORGE CO.
PITTSBURGH STEEL PRODUCTS CO.
REPUBLIC STEEL CORP.
SHARON STEEL HOOP COMPANY
SPANG-CHALFANT & CO., INC.
ST. JOSEPH ELEC. STEEL CSTGS. CO.
STANDARD ALLOY CO.
STANLEY WORKS
SUMMERILL TUBING CO.
H. J. SWEET FOUNDRY CO.
THE SYMINGTON CO.
TAYLOR-WHARTON IRON & STEEL CO.
TEXAS ELEC. STEEL CASTINGS CO.
UNION DRAWN STEEL CO.
WALLINGFORD STEEL CO. (WALLINGFORD)
WARMAN STEEL CASTINGS CO.
THE WASHINGTON IRON WORKS
WEST STEEL CASTING CO.

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Bars—Castings—Forgings—Plates—Sheets—Strips—Tubing—Wire

NIROSTA METAL

been let to a local contractor. Stahl & Co., McKerchey Building, Detroit, are architects.

Ticonderoga, N. Y.—The International Paper Company, 220 East 42nd. street, New York, is reported planning the rebuilding of portion of power plant at mill at Ticonderoga, destroyed by fire July 25, with loss reported at close to $25,000.

Philadelphia, Pa.—The Northwest Magnesite Company, an interest of the General Refractories Company, 106 South Sixteenth Street, is said to be developing increased capacity of fireproof insulating board, perfected in cooperation with parent organization, and is understood to be arranging an extensive campaign to further the use of this insulating material in the future. Mill production is reported on regular schedule.

Plainwell, Mich.—The Michigan Paper Company has active work in progress on a new power plant to be equipped for a capacity of 1800-boiler horsepower, and which is a feature of a general expansion program now being carried out at the plant. It is understood that the power house will have an initial installation of 1200-boiler horsepower with an additional 600 horsepower unit to be added at a later date. The company will also electrify its mill. The entire program is reported to cost about $350,000.

New Companies, Etc.

Chicago, Ill.—The Eureka Paper Box Corporation, 811 Rees street, has arranged for an increase in capital from $30,000 to $75,000, for general expansion.

Cincinnati, Ohio—The Whitaker Paper Company, Eggleston Avenue and Sixth street, has arranged for a change in capital from $3,500,00 in common stock to 35,000 shares of stock, no par value, the preferred stock remaining at $1,500,000, as heretofore.

Newark, N. J.—The Paper House of New Jersey, Inc., has been incorporated with a capital of $25,000, to deal in paper goods of various kind. The incorporators are Oscar Kaufman and Jacob Bagish. The company is represented by Herman Rice, Irvington.

Providence, R. I.—The Progress Paper Company, 140 North Main street, has filed notice of organization to deal in paper products of various kinds. New company is headed by Barnet Bander, 108 Congress Avenue, Providence.

Half Moon, N. Y.—The Union Paper Company, Half Moon, has filed notice of reduction in company capital from $300,000 to $150,000.

Mosinee, Wis.—The Mosinee Paper Mills Company has arranged for a change in capital from $3,500,000 to $4,000,000.

Detroit, Mich.—The Western Paper Box Company, 257 West Woodbridge street, has arranged for an increase in capital from $40,000 to $100,000, for general expansion.

Chicago, Ill.—The Graham Paper Company, 1014 Spruce Street, St. Louis, Mo., a Missouri corporation, has filed notice to operate in Illinois, with a capital of $179,670, with local offce at 340 South Canal street, Chicago.

E. F. Seems With New Brunswick International

EDMUNDSTON, N. B., Can., July 30, 1930.—E. Frank Seems, who has been connected with the Fraser Paper, Ltd., mill at Madawaska, Me., for the past two years, has accepted a position with the New Brunswick International Paper Company at Dalhousie, N. B., his duties to begin August 1.

Mr. Seems at one time was assistant purchasing agent for the Tidewater Paper Mills Company, Brooklyn, N. Y., until the dismantling of that plant, after which he accepted a position with the Murray Bay Paper Company, a division of the Abitibi Power and Paper Company, where he organized a stores system. He went with the M. E. A. D. Company in May, 1928, who were then constructing two mills at Madawaska, Me., for Fraser Companies, Ltd. He was instrumental in organizing a Material Department for this company as well as a modern system of store keeping.

News of the Boston Paper Trade

[FROM OUR REGULAR CORRESPONDENT]

BOSTON, Mass., August 4, 1930.—The second in a series of striking color posters being mailed by the Tileston & Hollingsworth Company has just been issued. The current poster, "from the run of an actual job," is on Milton Text—Golden Orange—Wove. It advertises an automobile tire and four other colors besides the golden orange are used.

Thomas Compton Walsh, sales manager for the Hollingsworth & Vose Company, and Mrs. Walsh recently entertained a number of ladies and men from the Boston office at the hosts' Camp ToHoCowa, Maquan Lake, Hudson, Mass. Features of the day included swimming, golf on Mr. Walsh's course and other sports. A supper was served in the camp and singing was the final feature of the evening.

Floyd Blackman, secretary of the D. F. Munroe Company, passed the week-end at his summer home at Chichester, N. H., and was accompanied by his father, Arthur B. Blackman, president of the company.

The H. J. Dowd Company, Inc., is to erect a building for storage at a cost of $3,300 at 217 Thorndike street, Cambridge, Mass.

E. J. McDonnell, general manager of the Groveton Paper Company, Inc., Groveton, N. H., called on the Boston trade last week.

George D. Allen, treasurer of Knight, Allen & Clark, Inc., has returned from Harwichport, Mass., where he has been enjoying a three weeks' vacation.

The Deerfield Glassine Company, Monroe Bridge, Mass, is very busy, with a large volume of orders.

Boston Paper Market Active

[FROM OUR REGULAR CORRESPONDENT]

BOSTON, Mass., August 4, 1930.—The improvement in the paper market continues, with both merchants and manufacturers stating that there is more activity. Demand for fine paper, according to various reports, ranges from pretty fair to very lively. Some dealers experienced a good July. The call for a wrapping paper is seasonal, but at the same time averages fairly good. The market for goods used at summer resorts and soda fountains, such as drinking cups, paper napkins, etc., has been especially satisfactory this year, with the hot weather begining earlier than usual, and the demand continues. Many mill representatives have been calling on the trade in the last week or so. With a betterment of business conditions generally the trade as a whole is optimistic.

With the shoe factories feeling a greater demand for foot wear, there is more reed for cartons for their products and consequently a larger amount of box board sold in this market. This demand is rather wide, especially true in Maine, Brockton and Haverhill, and has brought about a better feeling in the box board industry. Values are holding well in all grades of board.

The encouraging status of the paper stock market continues. It is felt that another week may see higher prices paid by the mills, but present quotations are the same as those of a week ago. It is reported that there is a stronger feeling in mixed paper. The No. 1 grade is now quotable at .20.

Cost and Technical Association Meets

[FROM OUR REGULAR CORRESPONDENT]

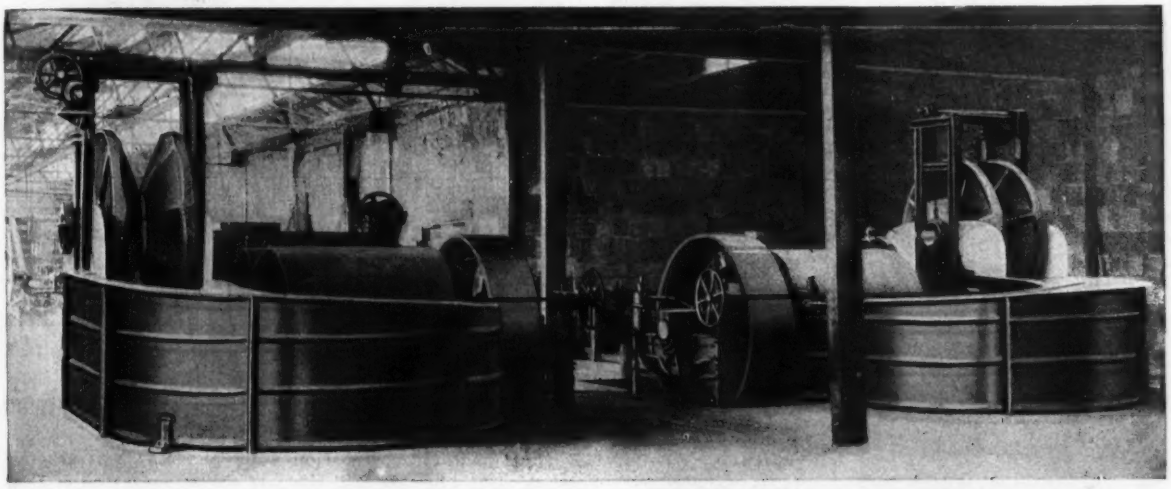
KALAMAZOO, Mich., August 4, 1930.—The Cost and Technical Associaton of the Paper Industry, Kalamazoo Valley division. held its July session at Watervleit, Wednesday afternoon and evening of last week. The Paw Paw Lake golf course was thrown open to the use of the visitors, through the courtesy of the Watervleit Paper Company officials. Dinner was served in the evening and two papers followed: Ernest Turner, of Paper Makers Chemical Corporation, spoke on "Present Business Conditions." Mr. Faran, of the Watervleit Paper Company, took "Coating Mill Problems" for his topic. The gathering was well attended.

"We Are Not Interested In Rebuilding The *Best* Beater On The Market"

THE above is taken from a letter written by a prominent Eastern paper manufacturer in response to an inquiry regarding the rebuilding of his Valley-Niagara Beater installations by another beater builder.

. . . . . Which is merely typical of the dependable, highly satisfactory service Valley-Niagara Beaters are rendering throughout the entire industry.

On any comparative basis—amount of stock, beating time, circulation, horsepower, or hydration tests—comparisons are invariably superior with the Niagara—the *original* high speed beater.



With installations in every type of mill and on various grades of paper, we are in a position to tell you what other mills have accomplished with the Niagara Beater. Our intimate contact with hundreds of different beating problems during the past decades, enables us to intelligently make recommendations which will help you improve your present beating room conditions.

All our men on the road are either practical men or technically trained engineers and would be glad to talk over your beating problems. Address your inquiry to the Valley Iron Works Co., Appleton, Wisconsin.

VALLEY

Equipment for Paper and Pulp Mills

New York Office: 350 Madison Ave.
Western Mfg. & Sales Div.: Smith & Valley Iron Works Co., Portland, Ore.
Canadian Representatives: Pulp & Paper Mill Accessories, Ltd., Montreal, Canada

POWER PLANT SECTION

REDUCING POWER COSTS THROUGH UNIT TREATMENT

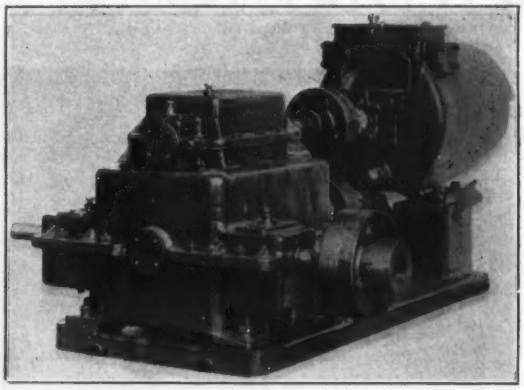
Conducted by **Reginald Trautschold Consulting Engineer**

Drive and Power Units For Paper Machines

II—Electric Motor Power Units

Whether the power requirements of the paper machine can be economically divorced from the thermal needs of the machine is the basic consideration upon which the advocates of steam turbine and electric motor drives differ for the most part. Obviously, the possibility of using the exhaust from the steam turbine in the paper machine and for drying is a consideration which exerts a good deal of weight in securing the satisfactory heat balance essential for economical mill operation. It is also held in some quarters that the steam turbine makes possible a more precise and delicate variable speed control than any arrangement of variable speed motors. On the other hand, many mills have found the electrical sectional paper machine drive has much to commend it and have found it entirely feasible to provide for the thermal needs of the machine in other ways than by dependence upon the exhaust from the driving power unit.

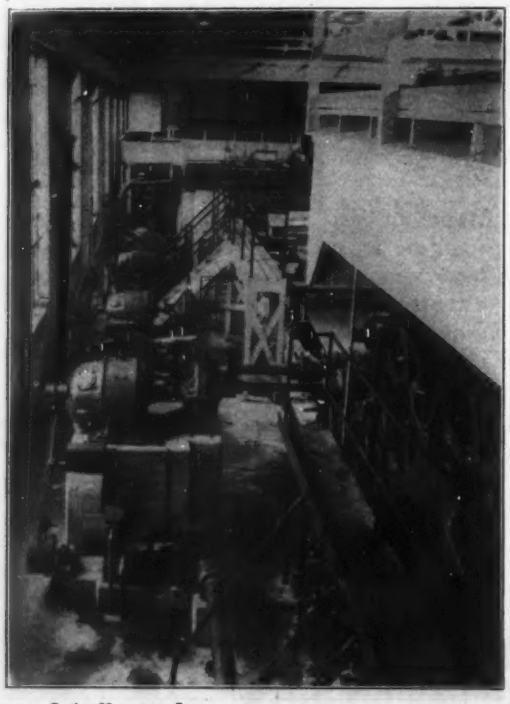
[1] For other discussions on machine drives, see Paper Trade Jour., June 20, 1929, and July 23, 1930.



Courtesy: Cutler-Hammer, Inc.

FIG. 1.

Differential regulator unit for paper machine drive.



Courtesy: Cutler-Hammer, Inc.

FIG. 2.

Motor with gear reduction unit mounted on concrete foundation, showing differential regulator with motor operated draw control in front of drive unit.

Where mills are operated on water power, as was general in the old days when the mill site was almost always on or near a flowing stream and a water wheel provided the power supply and, also, in such favored situations today where efficient hydraulic turbines drive the main electric generators, the electric motor drive is, of course, the logical and proper choice. Power is secured at a low unit rate and, in addition, there are other desirable features of the electrical sectional drive arrangement which can and should be suitably appraised by the individual mill. However, it is the low cost of power which is ordinarily the dominating consideraton and, consequently, if central station service can be secured on an attractive basis or power developed cheaply by any other means, the electrical sectional drive may likewise be the more economical application. In this connection, therefore, the views of recognized leaders among builders of such machine drives are most pertinent and the following comments should be of especial interest, particularly as drive installations are discussed which utilize power derived from various sources.

Electrical Sectional Paper Machine Drive

E. H. LAABS, E. E., CUTLER-HAMMER, INC.

"Since the introduction of a successful paper-making machine by Henry Fourdrinier (1766-1854), there has been continual improvement in the overall machine and in the process of paper manufacture, although only comparatively recently has there been any distinct departure in the controlling and driving method of the various sections of the paper-making machine. In the early days,

Eleven car-loads of Effective Lubrication

ONCE again an important lubricating job goes to Texaco. Eleven car-loads of Texaco Lubricants are shipped from one of The Texas Company's refineries as the initial order to cover the entire lubrication requirements of another large user of lubricating oils and greases. It is a vote of confidence in the superiority of Texaco Lubricants from a company which, for the past 40 years had been using other lubricants exclusively.

Texaco today lubricates more railroad car-miles than any other oil company. Texaco Lubricants are used in the mining plants producing nearly two-thirds of the country's copper and in a large growing percentage of the great industrial plants, power houses, factories and transportation systems throughout the world.

The high quality of Texaco Lubricants and the excellence of Texaco Lubrication Service are recognized everywhere.

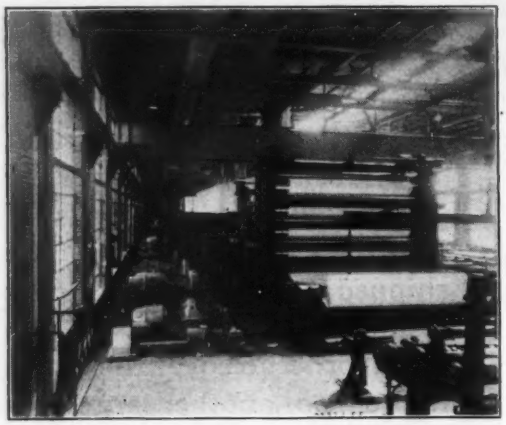
Write The Texas Company first.

TEXACO

THE TEXAS COMPANY
135 East 42nd Street, New York City

TEXACO LUBRICANTS

when the motive power was derived largely from the waterwheel, the paper-making machine was driven from a group of line-shaft-and pulleys, the control of the various sections being accomplished by means of clutches and belted cone pulleys. Later with the introduction of the variable speed transmission and the electromagnetic clutches used in connection with the constant speed engine or motor, it was only with comparative difficulty that the power requirements of the various sections of the papermaking



Courtesy: Cutler-Hammer, Inc.

FIG. 5.

Dry end of 220-in. paper machine, Mead Straw Pulp Co., showing drive side.

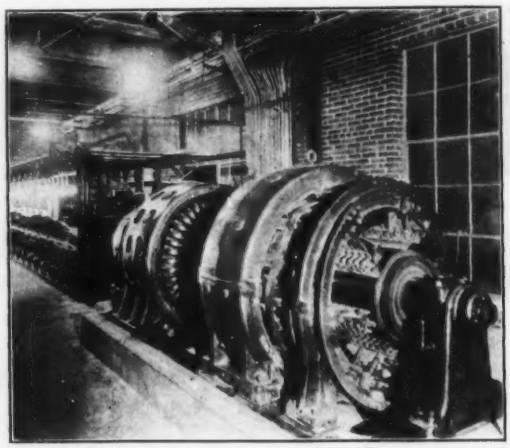
machine could even be approximated. There was no basis for obtaining definite data as to the power requirements of the various sections, and the power consumed by the overall machine could only be estimated by reason of the varying efficiencies of the transmission medium.

"With the introduction of the electrical sectional paper machine

Courtesy Cutler-Hammer, Inc.

FIG. 3.

Drive motors with gear units mounted on common bedplate, showing master shaft extending between drive units.



Courtesy: Cutler-Hammer, Inc.

FIG. 6.

Controller room, Mead Straw Pulp Co., showing motor-generator set and control equipment.

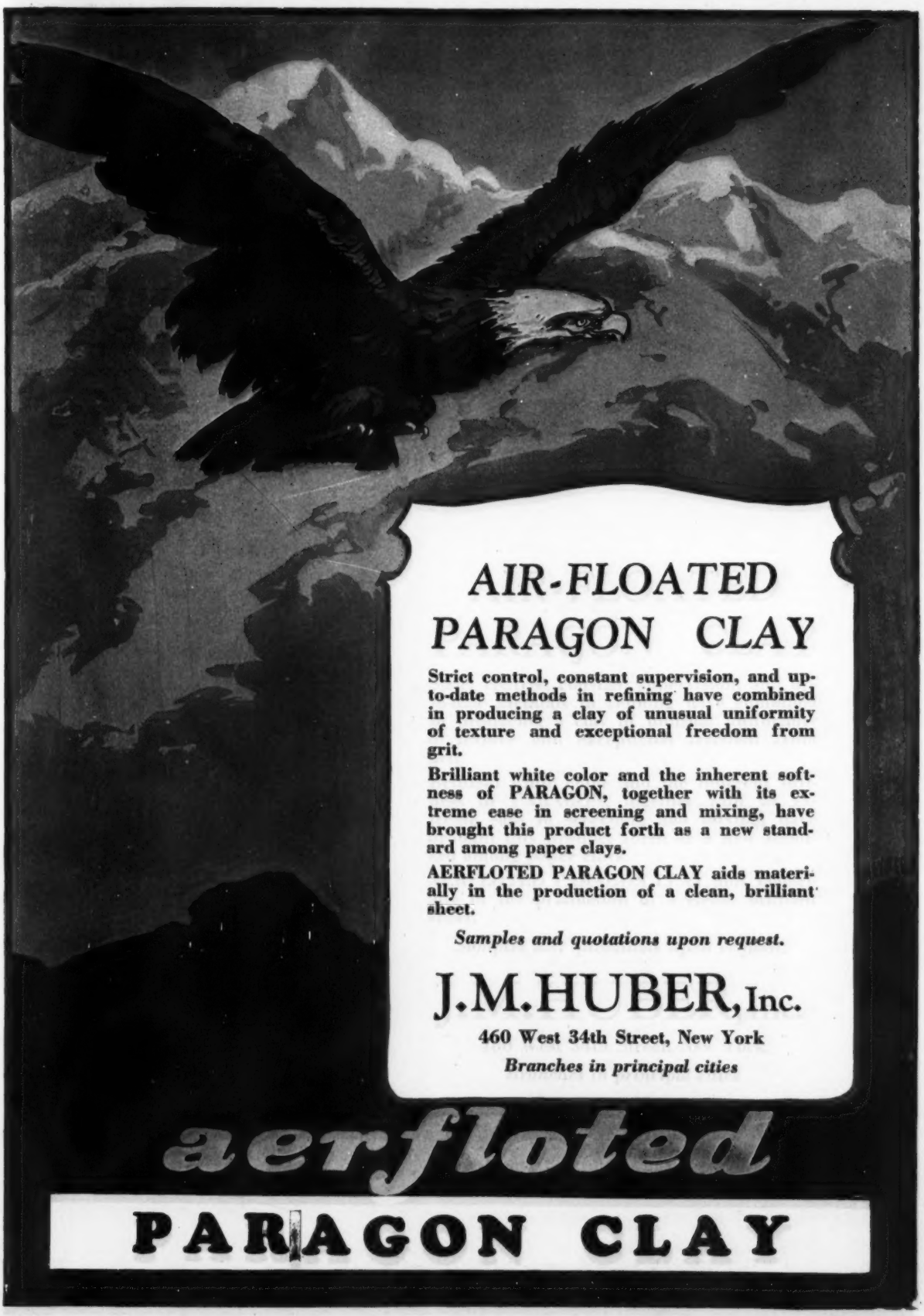
drive, however, it has been possible to obtain basic data as to the power required for driving the various sections, to study their operating characteristics and to apply the proper design of motor. The advantages of this type of drive are: better speed regulation, therefore a more uniform product; less 'broke,' therefore increased production; and lower maintetnance costs and production costs, due to the greater overall efficiency.

"There are three essentials in the driving and operation of a paper machine: first, the speed of the machine must be capable of overall variations to suit the kind and quality of the paper; second,

Courtesy: Cutler-Hammer, Inc.

FIG. 4.

Wet end of 220-in. paper machine, Mead Straw Pulp Co., showing electric drive and control equipment for couch, two presses, smoothing press, dryers, breaker stack, calenders and reel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PARAGON CLAY
Strict control, constant supervision, and up-to-date methods in refining have combined in producing a clay of unusual uniformity of texture and exceptional freedom from grit.
Brilliant white color and the inherent softness of PARAGON, together with its extreme ease in screening and mixing, have brought this product forth as a new standard among paper clays.
AERFLOTED PARAGON CLAY aids materially in the production of a clean, brilliant sheet.
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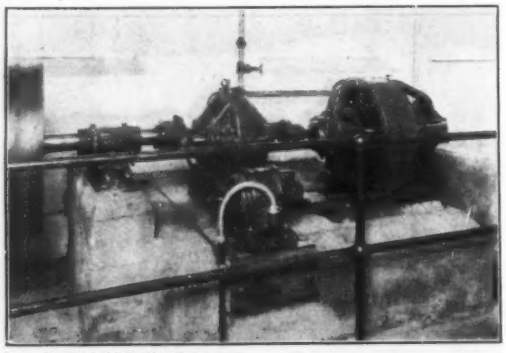
the speeds of the various sections must be capable of independent adjustment to obtain the requisite 'draw' between sections for a given kind and quality of paper; and third, the proper speed of the overall machine set, with each section adjusted to the required draw, must be maintained with relative constancy. For such exacting requirements, the direct current motor is best adapted, by virtue of its variable voltage and shunt field control, the complete drive equipment consisting of the power generator set, the several sectional drive motors and the differential regulators.

"The power generator unit in the case of an alternating current supply, as is usual, consists of a synchronous motor-generator set with an exciter. The synchronous motor may be of unity power factor or have a leading power factor to meet local conditions. The generator is used to supply the current for the sectional motors, while the exciter supplies the field current for the generator, the section motors, and is used in the control system. In our sectional drive systems, a small master shaft is used, which is directly connected to the dryer section and to each first element of the differential regulators.

"The motors for each section are connected through suitable reduction gear units and the motor actuating the dryer may be considered the master motor, since its speed forms the basis for adjusting the draw of all other sections. This master motor, with its controller, is designed for the proper base speed to give the



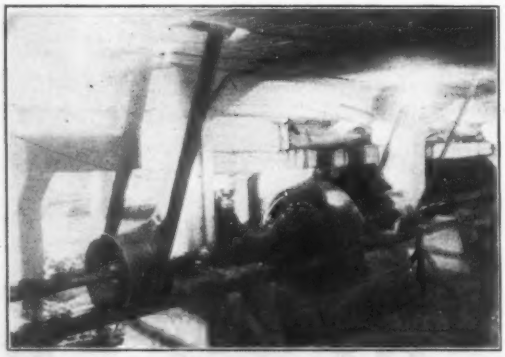
Courtesy: General Electric Co.

FIG. 8.

Direct current motor geared to back lineshaft with pilot generator, Smith Paper Co.

necessary overall draw on the entire paper machine, from the couch to the reel.

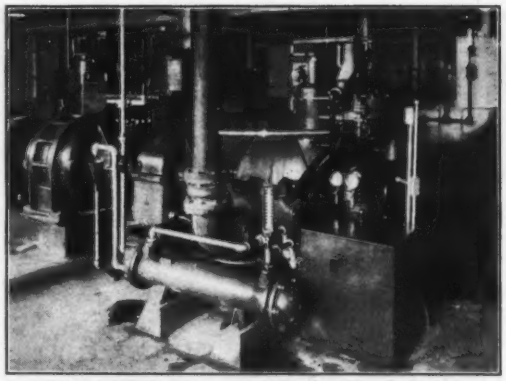
"The second member of the differential regulator extends to the side of its section motor and each motor, except the master motor, is provided with a set of small cone pulleys and a motor driven control for adjusting the section to the required draw. The differential regulator is of the planetary type, totally enclosed and



Courtesy: General Electric Co.

FIG. 10.

Direct current motor direct connected to back lineshaft, Ohio Boxboard Co., located in basement below paper machine.

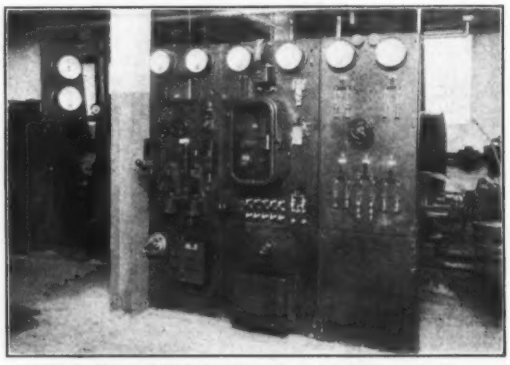


Courtesy: General Electric Co.

FIG. 7.

Geared turbine-motor-generator set, Smith Paper Co., showing steam turbine, synchronous motor and direct current generator.

operating in oil, with its third element connected to the regulator arm. This unit is so designed that, when all sections have been adjusted to the proper draw, the regulator arm does not revolve, but serves only to correct any slight difference in the speed of its



Courtesy: General Electric Co.

FIG. 9.

Control panels for paper machine drive, Smith Paper Co., showing synchronous motor control panel, speed regulator panel and direct current feeder panel.

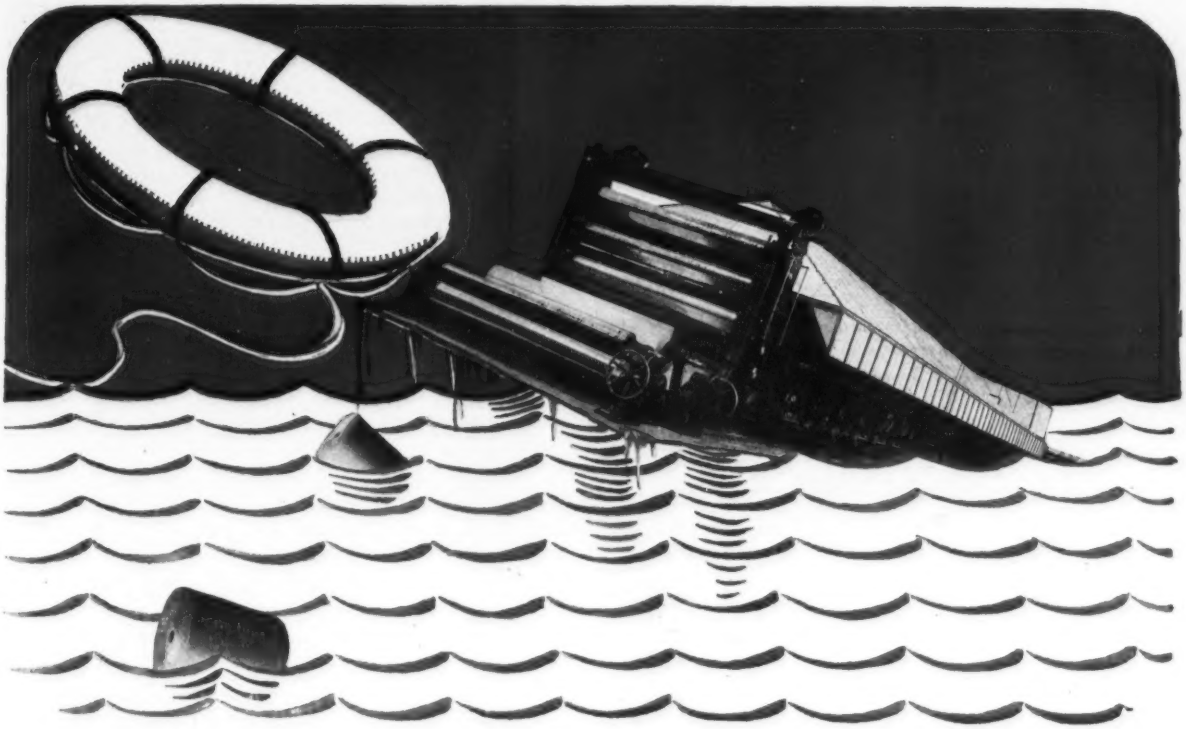
section motor, the speed of which may vary a little on account of slight differences in the characteristics of the various section motors, the characteristics of the machine sections, the load, the product going through the machine, etc. The correcting factor may be as small as one half of 1 per cent of the speed at which the motor is running.

"In a recent installation, just put into service on a 228-inch pa-

Courtesy: General Electric Co.

FIG. 11.

Main control room, Ohio Boxboard Co., housing motor-generator set and automatic control equipment for slip-ring, squirrel cage and synchronous motors.



Life Preservers for Sinking Equipment

Have you a sinking paper machine in your mill? One that served well in its day but seems at its last gasp against the tide of modern efficiency?

Here's help! In the recent past we've pulled an amazing number of obsolescent machines back on the safe shore of profitable production. Changed them from liabilities to assets.

No miracles. Just common sense rebuilding . . . the replacement of a worn part here; a touch of modernization there; a repair job someplace else. The important point is that we look upon this type of work not as tinkering but of sufficient importance to command the full resources of our adequate, modern plant, with its background of more than a century of paper machine building and its skilled staff of paper machine specialists.

Naturally we like to build and sell new equipment, but that doesn't deter us from salvaging the good in old. At least it is worth your consideration.

The Bagley & Sewall Co.

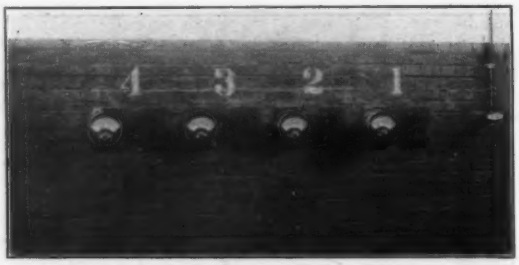
Watertown, N. Y.

44

per machine at the plant of the Mead Straw & Pulp Company, at Chillicothe, O., the master shaft and section motors mounted to the left, when viewed from the dry end of the machine, to the right from the couch end. Individual drive motors are provided for the couch, presses, smoothing press, breaker stack and the dry end dryer section, all controlled from the master motor actuating the wet end dryer section. The machine so driven is used for the manufacture of book paper and has a capacity of 75 tons a day. The drive and control equipment was designed to operate the machine at speeds ranging from 200 to 800 feet per minute.

"The power available at this plant is 2,300 volts, 3 phase, 60 cycle current and a synchronous motor-generator set of 80 per cent leading power factor is used. The control equipment, consisting of a panel type controller for the synchronous motor, an exciter panel with automatic voltage regulator and a control panel for each section of the paper machine, is located, as shown, along one side of the controller room.

"The operation of the entire equipment has been greatly simplified. The motor-generator set is automatically started by pressing the 'on' button in a push-button station, while each section of the paper machine can be operated independently by means of a master station mounted at the machine.



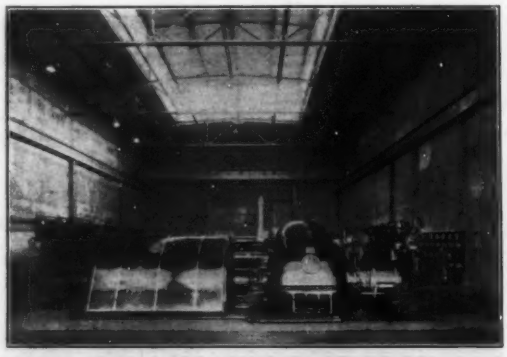
Courtesy: General Electric Co.

FIG. 12.

Push button control and indicating ammeters, Ohio Boxboard Co., for regulation of 2,300 volt motors.

"The control for the couch and presses provide for a crawling speed, when desirable, and the calendar control is arranged for reversing from the master station. Each section being started, the control automatically brings each section into interlock under control of the master motor and master shaft. The overall speed of the paper machine is then under the control of one push-button station mounted at the wet dryer section, while the draw of each section is controlled, likewise, by push-buttons, a station being mounted at each section.

"In line with modern design and trend toward safety to operators and protection to equipment, all master shaft bearings are of the roller bearing construction; the gears of the double spiral type,



Courtesy: General Electric Co.

FIG. 14.

Main extraction turbine driving alternating current generator supplying mill power for southern Kraft mill.

Courtesy: General Electric Co.

FIG. 13.

178-inch paper machine in southern mill, with multiple generator, sectional drive, employed for making Kraft paper.

running in oil; the motors fully enclosed and all pushbutton stations of waterproof construction. The clearance around the drive and the absence of rotating pulleys, moving belts, etc. is also very noticeable in this installation, as is quite apparent in the view from the reel, showing the arrangement of the drive units, differential regulators and motor driven draw control."

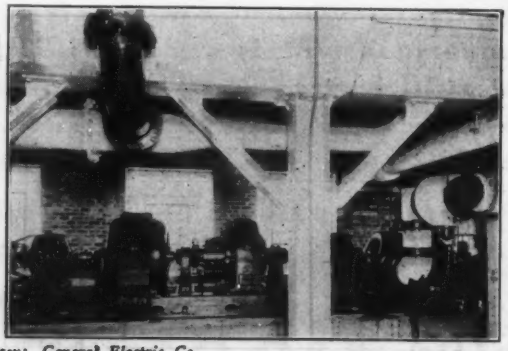
Some Interesting Cases of Electric Drives

GENERAL ELECTRIC COMPANY

An interesting case of a sectional electric drive in which a steam turbine carries the machine load at times in a mill normally operated on central station service is at the Smith Paper Company, Lee, Mass., where, incidentally, the paper used in capacitors, believed to be the thinnest high grade paper employed in industry, is produced. The drive provisions are quite unusual and are made necessary by the peculiar climatic conditions of the region.

"The mill, located in the Berkshire Mountains, is visited in the summer by many thunder storms and the lightning often strikes or affects the power lines, causing frequent 'outages.' These interruptions, though usually of short duration, are quite serious, for they necessitate the cleaning of the Fourdrinier wires before production can be resumed.

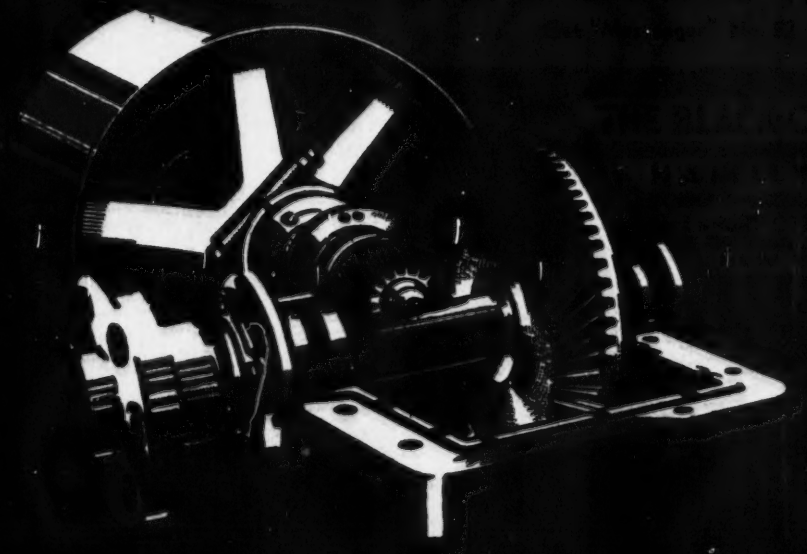
"In order to take care of this situation, a dual turbine and synchronous motor generator was installed. Normally, the steam turbine operates at about half load, as that furnishes sufficient steam for drying the paper, the speed of the turbine, under back pressure governing, being held constant by the synchronous motor. When the system is affected by lightning, however, reverse power relays are tripped and a circuit breaker disconnects the motor from the line. This circuit breaker is so interlocked with the turbine

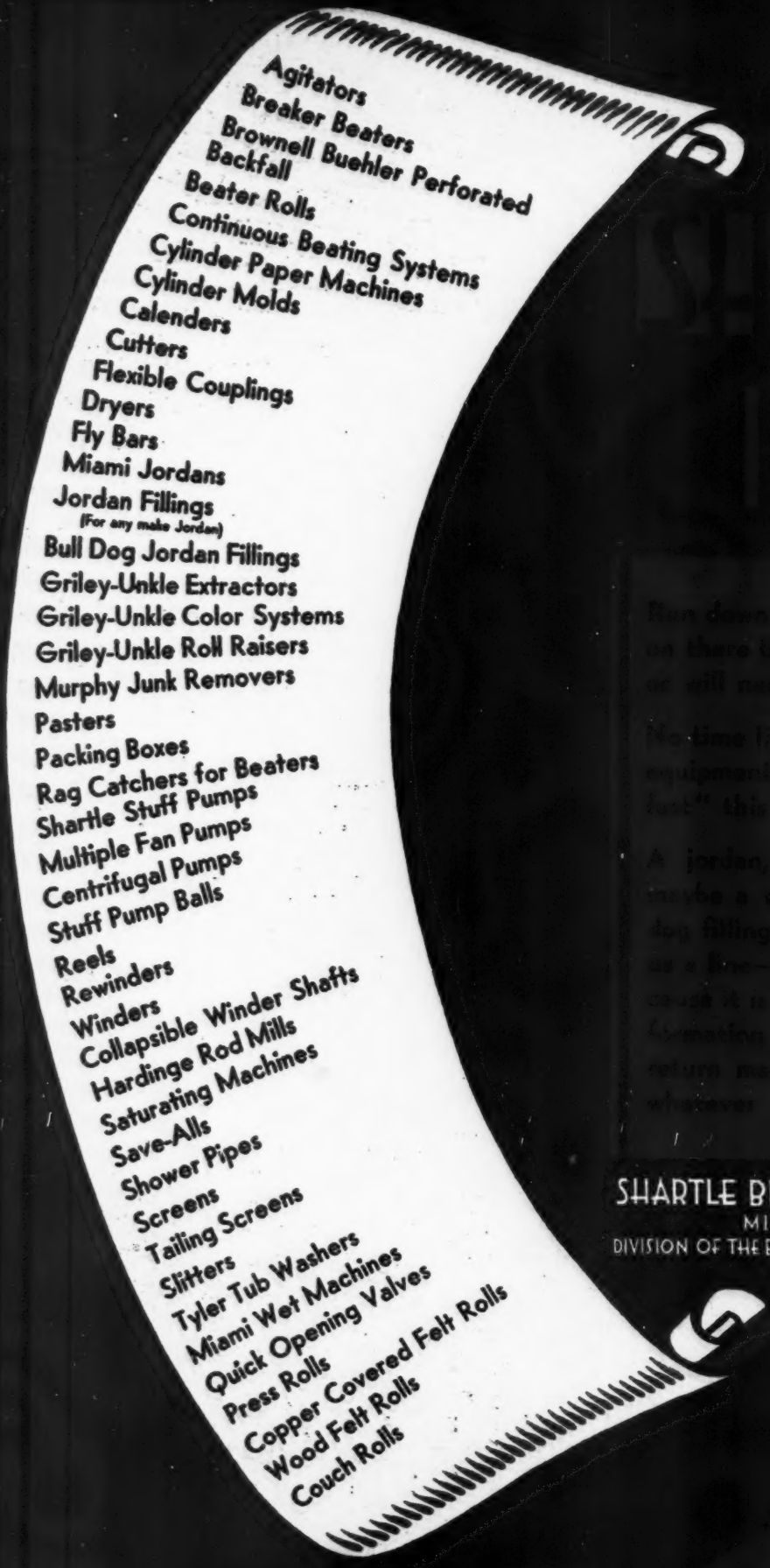


Courtesy: General Electric Co.

FIG. 15.

Power plant of western mill producing 150-pound book paper. Turbine drives two machines, a direct current generator and an alternating current unit operating either as a motor or as a generator.





Run down this list. What is there on there that you need right now, or will need in the near future?

No time like now to replace worn equipment and get ready to "step fast" this fall and winter.

A jordan, perhaps, or a pump, maybe a couple valves or a bull dog filling! Whatever it is, drop us a line—or use the coupon because it is quicker. Complete information will be forthcoming by return mail and service will be whatever the application requires.

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DIVISION OF THE BLACK-CLAWSON CO. HAMILTON OHIO
EXPORT OFFICE
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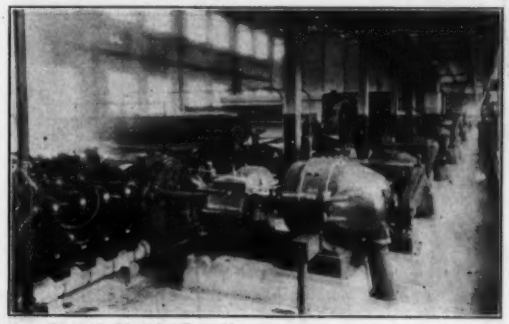
NEW YORK CITY

governor that when the breaker opens, the turbine changes from back pressure to speed governing and the turbine picks up the part of the load usually carried by the synchronous motor and cares for it until the service power is returned to the system and the motor is re-synchronized.

"The line shaft of the paper machine is driven by a direct current motor through reduction gearing, speed adjustment of the motor being secured by generator voltage (Ward Leonard) control. That is, a speed regulator keeps constant speed on the paper machine by controlling the voltage of the generator. Any change of speed on the main motor, consequently, results in a change of armature voltage on the pilot generator and the regulator then adjusts the field of the main generator to the new conditions and maintains constant speed.

"The installation at the Ohio Boxboard Company, Rittman, O., is an example of a convenient sectional electrical drive for a cylinder type paper machine. A single direct current motor, direct connected to a line shaft, forms the wet end drive, while individual motors are used in the cylinders and presses.

"Power is furnished to these motors from a synchronous motor-generator and all magnetic control is provided for the wound rotor,



Courtesy: General Electric Co.

FIG. 16.

Sectionalized drive of paper machine making 150-pound book paper.

squirrel cage and synchronous motors. This control, together with the motor-generator set, is located in one room and operated from push button stations located near the individual motors. Ammeters are also placed at the push button stations to show the loads on the individual motors.

"The 178-inch paper machine in a southern mill, illustrated, is employed for making Kraft paper from southern pine and is an excellent example of a machine equipped with a multiple generator, sectional drive having the very considerable speed range of from 100 to 1,000 feet per minute. This wide variation in machine speed permits various weights of paper to be produced, ranging from light bag to very heavy wrapping paper.

Courtesy: General Electric Co.

FIG. 18.

Individual motor drives applied to seven cylinder moulds and four primary presses in eastern board mill, a mechanical drive being used for the remaining sections.

Courtesy: General Electric Co.

FIG. 17.

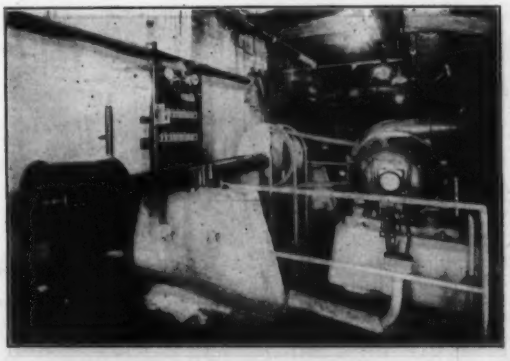
Alternating current, adjustable speed motors operating a two-section paper machine.

"An extraction turbine, driving an alternating current generator, furnishes the mill power and steam, extracted from this drive turbine at low pressure, is used for drying the paper. The drive proper provides a separate generator for each individual motor, for generator voltage (Ward Leonard) control, the generator fields being controlled from individual speed regulators, the motors operating with constant fields.

"The interesting feature of the installation shown in the views of the sectionalized drive at a western paper mill producing 150-pound book paper at speeds ranging from 80 to 500 feet per minute is the power plant. Two machines are direct connected to the shaft of the turbine furnishing the exhaust steam for drying the paper, one a direct current generator and the other either an alternating current motor or an alternator, depending upon circumstances and floats on the outside alternating current power lines.

"When light weight stock is being run, the demand for drying steam is light and the speed of operation greater, creating a greater demand for electric energy. Conversely, when heavy stock is being produced, the demand for drying steam is heavy and the paper machine is slowed down, reducing the demand for electric energy. Consequently, there would be opposing demands at either of the two operating extremes, since when the generator needs more steam, the dryers need less, and vice versa.

"A balance is established through the medium of the alternating current unit floating on the power lines. When the dryers require more steam than needed by the generator to care for the electrical demand, the alternating current acts as a generator, driven by the turbine, and pumps power back into the alternating current system. When the generator requires more steam, to take care of the electrical demand, than is needed for drying, the alternating current



Courtesy: General Electric Co.

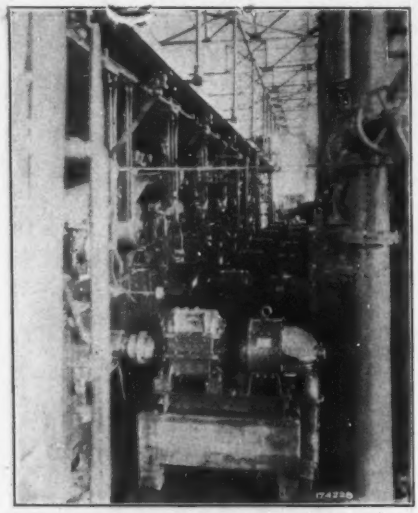
FIG. 19.

Mechanical drive rope-connected to back lineshaft of eastern board mill where individual motor drives are employed for the cylinder and primary press rolls.

unit runs as a motor, helping to drive the generator, and takes power from the alternating current system.

"The view of the drive showing two alternating current, adjustable speed motors operating a two-section paper machine is also somewhat unusual. Changes in the speed of the motors are accomplished by shifting their brushes. A speed regulator is tied in with both motors so that any change in the speed of one is instantly transmitted to the other and there is no difference in their relative speeds.

"A special motor drive for a cylinder type paper-board machine is shown in the next two views. In this arrangement, an individual motor drive is applied to the cylinders and a mechanical drive is used for the remaining sections. Each of the seven cylinder moulds and the four primary presses is driven by an individual motor supplied with power from a generator driven from the back line shaft. This practice relieves the felts from mechanical drive duty, with the result that maintenance is considerably reduced."



Courtesy: Westinghouse Electric & Mfg. Co.

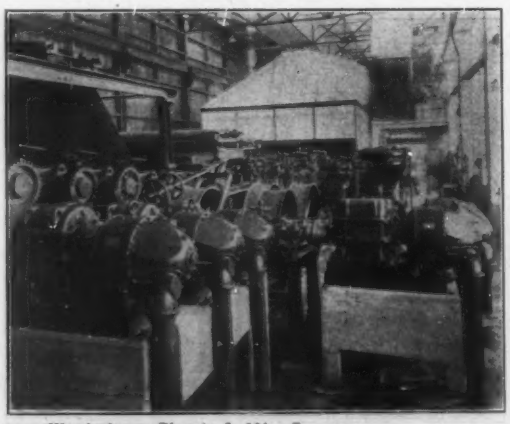
FIG. 20.

Individual motor drive for cylinder moulds

Notable Achievements in Paper Machine Drives

J. S. ERICKSON, WESTINGHOUSE ELECTRIC & MFG. CO.

"The first cylinder paper machine to have complete individual driving motors for all sections, including cylinder moulds, baby presses and primary presses in addition to all of the main sections, was installed and has been running successfully for the past two years at the plant of the National Paper Products Company, Port Townsend, Wash. This drive is installed on a 130-inch, seven cylinder, board machine and includes twenty-six individual driving motors. The performance of this drive has indicated a greatly increased felt life, improved formation and increased strength in the formed sheet, sustained capacity at maximum production, almost complete elimination of felt stretch and complete avoidance of felt and sheet stretch between the cylinder moulds and the first main press.



Courtesy: Westinghouse Electric & Mfg. Co.

FIG. 21.

Individual motor drives applied to the primary and baby press sections of cylinder machine.

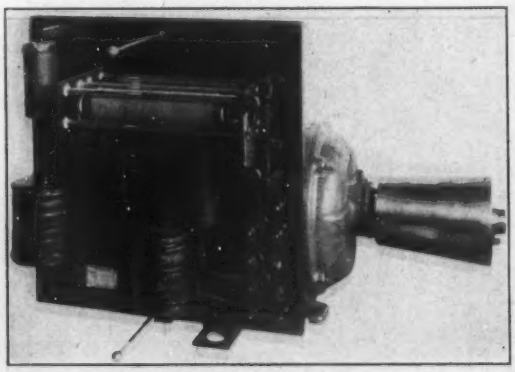
Courtesy: Westinghouse Electric & Mfg. Co.

FIG. 22.

Sectional motor drive applied to high-speed newsprint machine

"Another drive of this type is now being installed on a 178-inch cylinder machine at the Brown Paper Mill Company, Monroe, La. This drive has twenty-two individual driving motors which will operate over a 10 to 1 speed range with a maximum speed of 750 feet per minute.

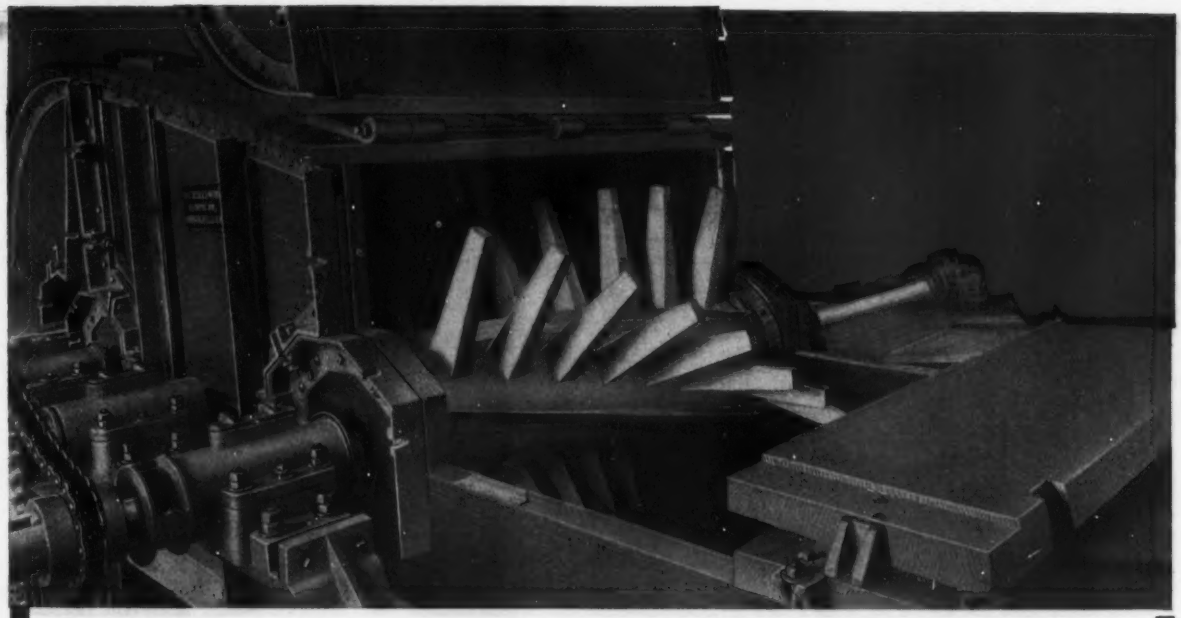
"Paper machines making tissue, heretofore, have usually had pick-up felts to transfer the flimsy material from the wire to the press sections and from the press sections to the dryer section,



Courtesy: Westinghouse Electric & Mfg. Co.

FIG. 23.

Carbon pile speed regulating unit with cover removed from carbon pile panel.



THIS PULPER WHIPPER SAVES YOUR BEATERS

Pulp laps in any condition, telephone books, directories, roll butts, rough waste, ruin a beater... throw the roll out of alignment, twist the bars... cause trouble aplenty.

A beater isn't meant for that sort of furnish. *But the Noble & Wood Improved Pulper IS!* Its sturdy whipper is a glutton for punishment ...knocks the fibers out of any sort of furnish... keeps asking for more, no matter how fast you feed it.

Every minute the Pulper operates it is making paper,—depulping, refibering, hydrating, preparing the stuff to take the load off the beaters. When it leaves the Pulper... *continuously, if the Selective Extractor is used*... very little further treatment is necessary. Beating time is reduced to a negligible minimum. In fact, in some installations, beaters are eliminated entirely.

Noble & Wood Improved Pulpers are justifying their presence in many diversified mills by saving the beaters, cutting time and converting into good, saleable paper materials usually consigned to the furnace. Let us show you how well they can fit into your mill.

NOBLE & WOOD
MACHINE COMPANY
Hoosick Falls New York

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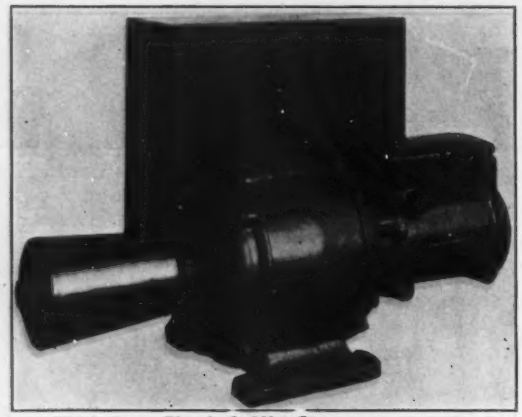
with the result that the paper speeds have had to be comparatively low. This, however, is no longer necessary for a machine producing tissue has been operating very successfully at the National Paper Products Company, Carthage, N. Y., at a paper speed of 750 feet per minute. Even this rate is now no longer considered excessive, for this particular sectional electric drive is designed to operate up to a maximum speed of 935 feet per minute.

"A recent 'Minton Vacuum Dryer' drive has been installed on a pulp board machine and is reported to be operating very successfully at the Olympic Forest Products Company, Port Angeles, Wash. Individual motor drives are applied to each roll of the dryer section, as well as to all other sections of the machine. The Celotex Company, also, is operating a sectional drive installed on a board mill at Marrero, La. This drive has been in operation about a year and the results secured have been very satisfactory. Incidentally, this is the first mill of the type to be driven by a sectional drive.

"The application of the sectionai drive to high-speed newsprint

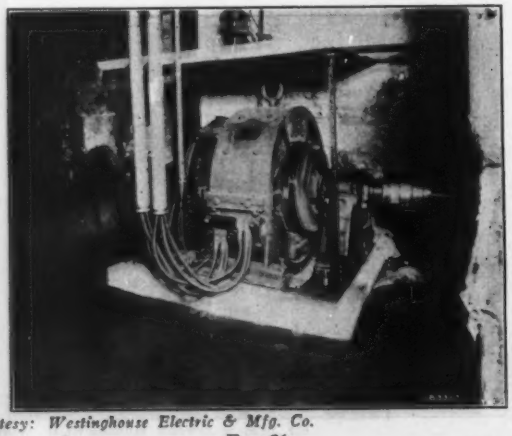


Courtesy: Westinghouse Electric & Mfg. Co.

FIG. 24.

Carbon pile speed regulating unit, showing rear of control panel, synchronous motor, differential case and cone pulley.

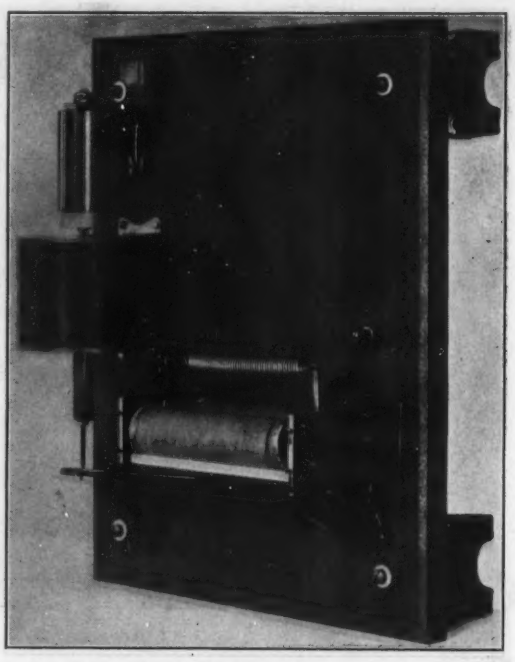
machines, likewise, indicates highly successful operation at the St. Lawrence Paper Mills, Three Rivers, Que., where four such complete drives are installed, two designed for a maximum speed of 1,200 feet per minute and two others for 1,400 foot operation. The Hawley Pulp and Paper Company, Oregon City, Ore., also has a sectional drive on this type of machine, designed to operate at a maximum speed of 1,500 feet per minute. Also, two complete sectional drives are now being built for the Maine Seaboard Company, Bucksport, Me., each of which will operate a 228-inch news-



Courtesy: Westinghouse Electric & Mfg. Co.

FIG. 26.

Direct current motor applied to lineshaft of paper machine for single motor drive.



Courtesy: Westinghouse Electric & Mfg. Co.

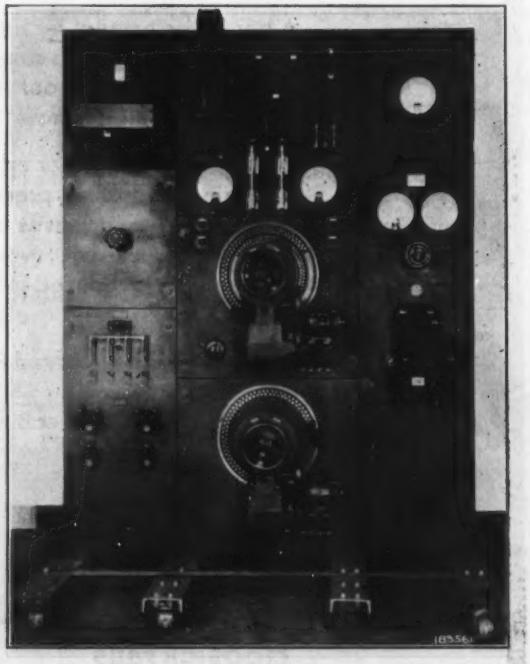
FIG. 25.

Carbon pile voltage regulator.

print machine designed for a maximum paper speed of 1,500 feet per minute.

"Perhaps the largest and speediest paper machine devoted exclusively to the manufacture of bond paper is located at the Grays Harbor Pulp & Paper Company, Hoquiam, Wash. This is a 202-inch machine and is driven by a sectional drive designed for a maximum speed of 1,000 feet per minute.

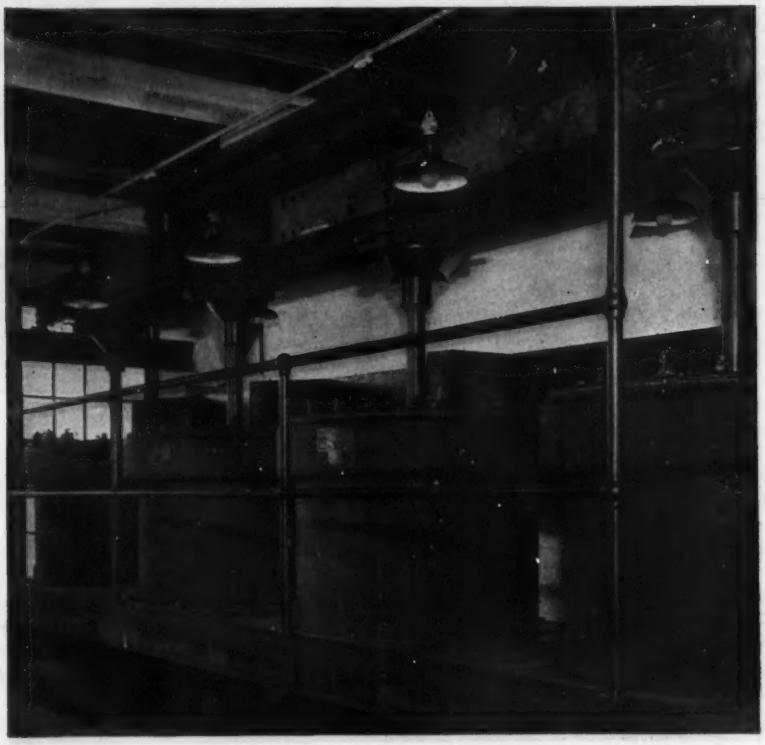
"In line with the more recent developments which have added



Courtesy: Westinghouse Electric & Mfg. Co.

FIG. 27.

Single motor control board for drive with speed regulation.



Competition won't worry you if your stock is Tolhurst-cleaned

The finest furnish ever mixed is worthless when dirt and specks appear in the finished paper. Rejects eat up the profits . . . salesmen get discouraged . . . superintendents rave . . . and competitors chuckle.

There's no need to gamble on every run. Tolhurst Centrifugals, eliminating wasteful sand traps and rifflers in your mill, can put stock on the wire that is *always* clean, *always* free from specks.

In other mills — in your competitors' mills, perhaps — Tolhurst Centrifugals are making paper that is cleaner than ever before, increasing sales and profits, reducing rejects and complaints. They offer the same advantages for *your* mill. Write for complete information.

TOLHURST MACHINE WORKS, Inc.
653 W. FULTON STREET, TROY, NEW YORK
New York Office: 30 Church Street :: *Chicago Office:* 8 So. Dearborn Street

TOLHURST
REGISTERED U.S. PAT. OFF.
Centrifugals

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4233

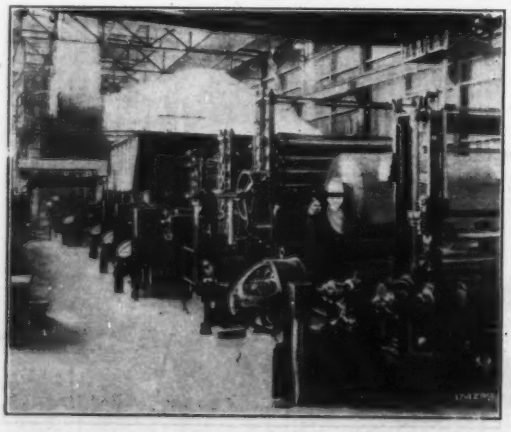
to the simplicity and dependability of the modern sectional electric paper machine drive, the most notable items are: the starting generator type of control for starting, inching and acceleration; the carbon pile voltage regulator; the carbon pile speed regulator; and the very compact arrangement of the entire equipment. The importance of each of these refinements is marked.

"The new starting generator system permits of a low voltage starting scheme on all section motors, which is a decided advantage over the old type of resistance starting. It relieves the machines of the mechanical shocks and strains which are inherent with the resistance system of starting, due to the necessarily limited number of acceleration points in the resistance. The acceleration is more gradual with the new system and the smaller space requirements for the control board are very noticeable. The installation costs, also, are much reduced.

"The carbon pile type of speed regulator is the latest device for maintaining the correct relative speeds for the section motors. It is a variable resistor in the field circuit of the section driving motor and is actuated primarily through a mechanical differential, of the screw and nut type, in which one end of the differential is driven by the master motor and the other by the section driving motor. Through suitable mechanical linkages any difference in speed between the two elements produces an angular displacement, resulting in a change in pressure on the carbon pile and so changing the resistance in the motor field. The effect is to maintain the motor speed at the desired value. In addition to the differential, powerful anti-hunting means are provided, through the use of field and armature solenoids, for quick reaction. Dash-pat anti-hunting features are also incorporated. Several complete sectional drives are now in operation with this type of speed regulator, all giving very satisfactory results.

"The carbon pile voltage regulator is particularly well adapted to the control of drives of the sectional type, owing to its freedom from maintenance troubles and its simplicity of operation. The regulator consists of a pile of carbon discs, a control magnet of the solenoid variety and necessary operating bell crank, springs, etc. This form of regulator eliminates the vibrating contacts and the delicately adjusted lever system of the older type of voltage regulator and assures continuous service with a minimum amount of attention.

"For paper machines already installed, on which the mechanical parts are in good condition, a single motor drive, the motor of which can be direct connected, geared or belted to the line shaft, has been developed. With this variety of drive, very close speed regulation is maintained over the entire operating speed range and from no load to full load. The speed regulating equipment consists of a carbon pile regulator, a small pilot generator and necessary rheostats. The operation of the regulator is entirely automatic and after it is once put in service requires no subsequent adjustment. It is rugged, simple in design and requires very little maintenance. Speed ranges as high as 10 to 1 have been effectively controlled. The large number of successful drives of this single motor type, twenty-seven of which were installed during 1929, indicate that the system is reliable, easily controlled and contributes considerably toward maximum production.



Courtesy: Westinghouse Electric & Mfg. Co.

FIG. 28.

Sectional motor driving units for dry end of cylinder machine, showing single motor winder drive.

Courtesy: Westinghouse Electric & Mfg. Co.

FIG. 29.

Sectional motor driving units for dry end of paper machine making bond, showing two motor winder drive.

"The winders located at the dry end of nearly all paper machines are a vital part of the mill equipment and advancement in the drives of these machines has been brought about by the use of the variable voltage drive, both single and multiple motor. This form of drive gives a slow and uniform speed for threading in without excessive wear on the clutch or slip belt and also gives a uniform acceleration rate from zero to the maximum operating speed, thus eliminating the possibility of a torn sheet with subsequent loss of production time and material. The use of multiple motors on winder drives permits, furthermore, adjusting the relative torque, or turning effort, developed by the motor so that the proper tightness of wrap may be secured. After such an adjustment has been made, it is automatically maintained from the empty winding core to the full roll by the inherent characteristics of the motors.

"The variable voltage winder drive, with the addition of the braking generator and automatic tension control, eliminates the back gearing, slip belts, countershafting, cone pulleys and mechanical brakes frequently employed and through the elimination of numerous adjustments, for obtaining correct relative winder roll speed and brake tension, affords maximum operating economy. It is instrumental also in attaining minimum operating expense and maintenance. With this type of drive, the operator has complete control of the winder operations from one position. The braking effort, instead of resulting in wear and tear on the equipment, is employed to assist in driving the winder."

Specialization in Paper Machine Drives

From the foregoing and also from the discussion on steam turbine drives in the issue of July 24, 1930, it is very evident that the satisfactory paper machine drive is the one which capitalizes on local conditions to the best advantage. Specialization rather than standardization would appear to be the chief requirement, specialization in the adaptation of standardized equipment to the needs of the individual mill. Many a new installation or application appears to shatter preconceived beliefs.

While the potent question of suitable heat balance may be the dominating consideration at times, at others the question of power costs may make it advisable to divorce the power requirements of

STANDARD PAPER MANUFACTURING CO
MAKERS OF
Standard Blottings
RICHMOND, VA., U. S. A.

June 27, 1930.

The Mid-West Machine Co.,
Dayton, Ohio.

ATTENTION: Mr. W. V. Knoll, Vice-President

Dear Mr. Knoll;

We have now had our three Mid-West Hi-Speed beaters in operation for several months, giving us a good opportunity to observe their performance. It is a pleasure to be able to say that we are certainly satisfied with them, and are very proud of the installation. We consider your beaters first class in every way and it is apparent that you have gone to extreme measures to give us a good job.

These beaters are being used in connection with our new 120" Rice, Barton & Fales Fourdrinier machine. Each beater handles an average furnish of 2800 pounds air dry weight of sulphite. The beaters are driven with 100 horsepower G. E. synchronous motors and Dayton Cog Belt drives, the maximum load being around 70 horsepower per beater.

At any time you wish to refer to our installation, we will be glad to give your beaters a good recommendation.

Sincerely yours,
STANDARD PAPER MFG. CO.,
MILL #3.
Carl Magnus
Carl Magnus, Supt.

STANDARD PAPER MFG. CO.
WELL SATISFIED
with their 3 MID-WEST BEATERS

MID-WEST HI-SPEED BEATERS are giving perfect satisfaction in leading paper mills. In every instance where MID-WEST BEATERS replaced slow, light-density Hollanders a great saving in power consumption has resulted. The Standard Paper Mfg. Company, Richmond, Va., manufactures the widely known "Standard Blottings". Mr. Magnus writes that the three MID-WEST HI-SPEED BEATERS installed in their plant are giving very satisfactory service and are a real money's worth. Write today for complete Portfolio of Information on MID-WEST beating as it applies to YOUR MILL.

No obligation, of course.

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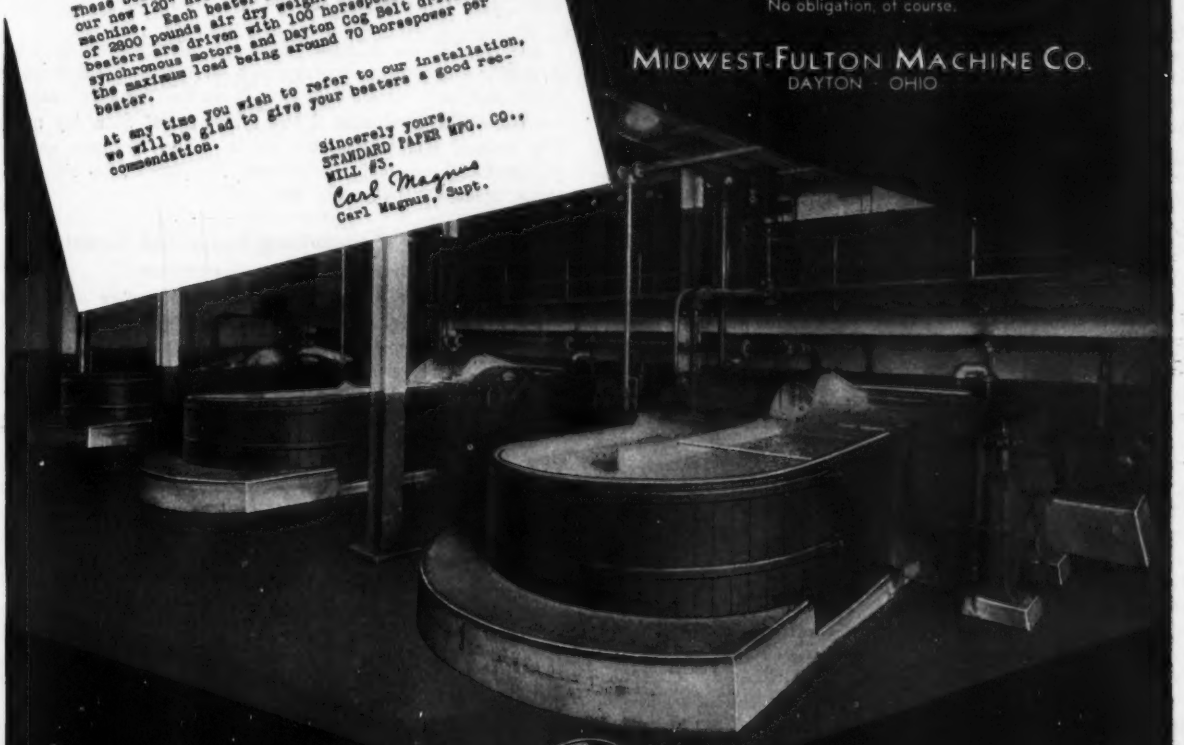

MID-WEST BEATERS — A WORLD OF DIFFERENCE — FULTON SYSTEMS

MID-WEST
HI-SPEED BEATERS

the mill from its thermal needs, a separation which can sometimes be effected with profit, despite the popular belief to the contrary.

In the old days, when paper mills were almost exclusively driven by water wheels, the drive unit supplied no exhaust of value for use in the paper machine or for drying. Today, the actuating power units in the more efficient sectionalized electric drive are no more helpful so far as caring for the thermal needs of paper making. If central station service power is employed, there is no heating by-product. If the electric energy is secured from steam turbine driven generators, there is a source of process steam. With steam turbine drives there is probably a more ample supply of exhaust steam and of extracted steam for process operations.

Of course, the heat balance is important, so is the cost of power, but the determining factor should be the reliability of the machine drive at minimum net cost. Power at a rate of a cent, with a thousand hours of uninterrupted service, is cheaper than power at half a cent, with only half as many hours free from trouble. An economic problem is entailed, as well as one of engineering nature, for which reason satisfactory results in respect to paper machine drives secured in any mill are of concern to all mills.

The main object of this symposium on drive and power units for paper machines has been, therefore, to present the views of equipment manufacturers qualified to work with the paper mills in securing freedom from production interruptions and low operating costs. Examples of many economical machine drives have been cited, in order to illustrate how differing and diverse conditions have been reconciled in attempts to develop dependable and economical drives. The operation of paper machines defies standardization, but specialization is making great progress.

Attempt to Defraud K. V. P. Co.

[FROM OUR REGULAR CORRESPONDENT]

KALAMAZOO, Mich., August 4, 1930.—A sensational attempt to defraud the Kalamazoo Vegetable Parchment Company and its officials is contained this morning in an Associated Press Chicago dispatch. It involves the operations of Joseph P. Weil, better known as "The Yellow Kid" and one of the nation's best known confidence men and his gang of operators.

The story is verified in part by Jacob Kindleberger, president of the Kalamazoo Vegetable Parchment Company, who adds that it was only the insistance of the operators for quick action at the close of the deal that excited his suspicions and disclosed the plot.

The deal, according to Mr. Kindleberger involved contracts running into the millions for the manufacture of certain patented process papers, held by the conspirators under sales and patent rights in China and numerous European countries. There was even some talk of purchasing the local mill outright, though that never developed to any extent.

A mighty smooth game, well rounded out and apparently air tight was the way Jacob Kindleberger, president of the Kalamazoo Vegetable Parchment Company, characterized the sensational transaction with Joseph P. Weil, "The Yellow Kid" and others.

Mr. Kindleberger further admittted that he had personally suffered some financial loss through financial aid extended two very gentlemanly Chinese financiers, who were part and parcel of the "Yellow Kid's" outfit.

He said the statement of the Associated Press that he had purchased $15,000 worth of valueless mining stock from the Chinamen was incorrect.

Schroon River Pulp & Paper Co. Meets

WARRENSBURG, N. Y., August 4, 1930.—Among the directors elected at the annual meeting of the Schroon River Pulp and Paper Company held this week were Louis E. Reoux, Philip E. Rice, Albert L. Emerson, Harry A. Reoux, Adelia Reoux, Grace Adriance and Thomson Rice. The directors will meet in a few days to elect officers.

New York Trade Jottings

Walter Hicks, of Daniel M. Hicks, Inc., dealers in paper mill supplies, of 200 Fifth Avenue, New York, is spending his annual vacation at Shelter Island, N. Y.

* * *

The Gatti Paper Stock Company, of 122 East 42nd street, New York, has acquired the factory fomerly occupied by the Peerless Rubber Company at North Bergen, N. J., which will be used to expand the business of the former company.

* * *

John H. Engelke announces that he is no longer connected with William Steck & Co., paper mill supply dealers, of 15 Park Row, New York, and that he will shortly start in business on his own account handling waste material specialties.

* * *

Charles C. Phelps, manufacturer's agent, of 11 Park Place, New York, has been appointed sales agent for Metropolitan New York and Northern New Jersey by the Leavitt Machine Company, of Orange, Mass., to handle the Dexter Valve Reseating Machine for globe, gate and pulp valves.

* * *

The embargo on Russian pulp wood having been lifted by the Treasury Department, the steamers *Grelisle* and *Christian Bors*, which had been anchored in New York Bay for three days, were entered at the New York Custom House last Saturday morning. The steamer *Llanover*, with a similar cargo, has been entered at Portland, Maine, and the steamer *Portfield*, with still another cargo, is due at Baltimore, Md.

May Buy Ogdensburg Pulpwood Terminal

[FROM OUR REGULAR CORRESPONDENT]

OGDENSBURG, N. Y., August 4, 1930.—A number of prominent paper mills of this section are reported negotiating for the purchase of the Ogdensburg Pulpwood Terminal, hinging somewhat on the clearing up of the situation regarding the embargo on Russian pulp wood. The Dexter Sulphite Pulp and Paper Company is said to be identified with the negotiations while other firms which have been using the imported product include the Sherman Paper Company, of Watertown, National Paper Products Corporation, Carthage, Oswego Falls Pulp and Paper Corporation, Lewis, Slocum & Le Fevre, Beaver Falls, and several others. The Racquette River Paper Company, Potsdam, has been importing its supply for the past two years but on an independent basis.

The local terminal was built several years ago for the convenience of the De Grasse Paper Company which received its wood from Canadian forests along the St. Lawrence River. In view of the fact that the De Grasse mill owned by the International Paper Company has been shut down indefinitely it was learned that the firm is now anxious to dispose of the terminal which includes a large plant with docks, conveyors and storage space. About a year ago the Sherman Paper Company purchased a valuable terminal site at Morristown but as yet no arrangements have been made for development.

T. J. Burke at Northwestern University

Thomas J. Burke, Director of the Cost Department, American Paper and Pulp Association, left last week to attend the two weeks session of the National Institute of Trade Association and Commercial Organization Executives, to be held August 3—16, at Northwestern University, Evanston, Ill.

These annual sessions are arranged by the American Trade Association Executives, the National Association of Commercial Organization Secretaries, the United States Chamber of Commerce and Northwestern University. Mr. Burke is planning to call on member mills of the American Paper and Pulp Association in the Miami Valley District, both on his trips to and from Chicago.

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. . . . just TURN THE NUT

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Simply slacken the large nut at one end, and the four brass bars with their beveled lugs drop loose on the central shaft like a shut umbrella.

There's no chance of sticking, no telescoping of rolls, and never a call for a sledge or puller.

The construction is simple and rugged. No spring, small screws or rivets are used. Expansion is from 3/16 to 5/16 in. in diameter, according to size, and is uniform throughout.

Use them on any drum winder—with any grade of paper or paperboard—in any size of rolls.

THE MOORE & WHITE COMPANY
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M&W BRASS COLLAPSIBLE DRUM WINDER SHAFTS

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TAPPI APPOINTS PATENT COMMITTEE

Our patent system is without question the best method that has thus far been devised to stimulate and encourage ingenuity and inventiveness. This it does by endeavoring to secure to worthy inventors a reasonable compensation for the time, effort and money that they may have expended in making available to the public something of practical utility. The words "endeavoring to secure" are used advisedly. For, in a large number of instances, the inventor receives little or no return for his contribution to the arts and sciences. The chief reason for this rather unfortunate state of affaris is the fact that the system has developed some very serious defects which, in most cases, work to the detriment of the honest inventor, who, as a rule, does not know enough of the fundamental principles of patent law and procedure to avoid the many obstacles and pitfalls that are interposed in his path.

The procuring of a patent has become an involved, complicated and long drawn out proceeding in which the skill and experience of the attorney often plays a more important role than the merits of the invention. Then again, there is at present entirely too much needless uncertainty in relation to both the validity and to the scope of patents. This is due in large measure to the complicated procedure in the Patent Office and to the fact that patent suits must often be tried before judges who have had absolutely no previous knowledge of the subject and who in many cases are without technical education.

Concerted action on the part of the inventors and technical men of this country is most urgently needed to ameliorate and rectify the glaring defects in the system. Such action is only possible through the various technical associations and their patent committees. Hence, the Technical Association of the Pulp and Paper Industry, many of whose members are prolific inventors, has organized a Patents Committee.

Its purposes may be broadly stated as follows:

1. To cooperate with the patent committees of other technical associations as well as with those of law associations in improving the patent system.
2. To watch the patent situation including legislation and decisions of patent tribunals insofar as they may affect the protection of inventions relating to the pulp and paper industry and to keep the members of the association informed thereof.
3. To give from time to time information to enable the members to avail themselves to the fullest extent of the good features of the patent system and to avoid the many obstacles and pitfalls.
4. To present from time to time discussions of a general nature relating to patent matters of particular interest to the paper industry.

Of necessity membership of the committee is limited, but to succeed in its work, it needs the fullhearted cooperation of every member in the association. Suggestions and inquiries will be gratefully appreciated.

The personnel of the Patents Committee is as follows: C. W. Rivise, Patent Attorney, 1321 Arch Street, Philadelphia, Pa., chairman; M. P. Chaplin, Chief Engineer, Keyes Fibre Company, Waterville, Me.; J. D. Haskell, Engineer, Dilts Machine Company, Inc., Fulton, N. Y.; R. H. McKee, Professor of Chemical Engineering, Columbia University, New York; A. D. Merrill, General Manager, Chemipulp Process, Inc., Watertown, N. Y.; C. W. Mordên, Consulting Engineer, 206 Oregonian Building, Portland Ore.; Joseph Rossman, Patent Examiner, Patent Office, Washington, D. C.; E. A. Wagonseller, Patent Attorney, Container Corporation of America, Chicago, Ill.

AMERICAN WRITING MAKES GOOD RECORD

The American Writing Paper Company, Inc., since its reorganization recently, has been making an excellent record. An increase of $13,331.74 in net earnings during the first six months of 1930, compared with the same period of 1929, is shown by the financial statement of the company, just released. This increase in earnings was effected with a sales volume for the first half of this year 10 per cent below sales for the first six months of 1929, the report shows.

The company's net earnings for the first half of 1930, totalled $248,512.50, compared with $235,180.76 for the same period of 1929.

The balance sheet as of June 30, 1930, shows that the company's current assets are 8.27 times current liabilities. In the first six months of 1930, the company earned in excess of the dividend requirements on preferred stock thirty-seven cents per share on the outstanding shares of common stock.

"In most businesses," states Sidney L. Willson, president of the American Writing Paper Company, Inc., in commenting on the statement, "it will be found that from 60 per cent to 75 per cent of the profits of 1929 were earned in the first six months. For the calendar year 1928, the net earnings of the American Writing Paper Company, Inc., were $278,000, representing an average of $23,000 monthly; in 1929, the net earnings were $364,432.91, and an average of approximately $30,000 per month over the year. The company's net earnings for the first six months of 1930, of $248,512.50, represent an average of about $41,000.

"This increase in monthly earnings in 1930, has been accomplished on sales 10 per cent less in volume compared with the

same period of 1929, and under less favorable business conditions, but has resulted from concentration of product into fewer mills, higher efficiency in operations and administration and the increased sales of less competitive grades of paper."

Mr. Willson states that during the first six months of 1930, there has been a recognized depression in business of approximately 15 per cent below the average for the calendar year 1929, and approximately 10 per cent below the average for the last six months of 1929. Therefore, says Mr. Willson, in a comparison of the first six months of 1930 with the corresponding period of 1929, due allowance should be made for the difference in business conditions existing during the two periods.

"In my opinion," says Mr. Willson, "the bottom of our business depression has been reached, and I believe a gradual improvement will materialize and continue into 1931, when the average volume of business will be reached and maintained for a considerable period."

Seaman Co. Sells Merchandise Business

CHICAGO, Ill., August 4, 1930.—The Seaman Paper Company announces the sale of its Chicago paper merchandise business consisting of its entire stock of printing and specialty papers, and all such business as normally goes with a paper house to the Whitaker Paper Company, which will succeed to the paper merchandise business.

The Seaman Paper Company wishes to give its assurance to all of its customers that the entire lines and brands of paper formerly carried by Seaman will all be carried in the future by Whitaker.

In making this announcement, the Seaman Paper wishes to advise it has also disposed of its paper merchant business in the cities of Minneapolis, St. Paul, Des Moines, St. Louis and Buffalo, and is announcing at this time a new policy for the Seaman Paper Company.

This policy will be a national policy and not a local policy.

The Seaman Paper Company will continue as exclusive paper mill sales agents and manufacturers and will sell all lines of paper to paper merchants, large publishers, converters, etc.

On all business that is normally paper merchant business, in the future the Seaman Paper Company will not compete on such business except through recognized paper merchants.

The main office of the Seaman Paper Company will remain at 411 West Ontario street, Chicago, and the New York Office will remain at 122 East 42nd street, New York City.

Sutherland Paper Co. Makes Good Report

KALAMAZOO, Mich., August 4, 1930.—A highly gratifying showing is made by the Sutherland Paper Company in its balance sheet as of June 30, 1930, and copies of which were mailed to stockholders on July 31, with the regular quarterly dividend of 22½ cents per share on the outstanding common stock.

Total current assets are shown to be $1,444,687.97 and current liabilities are $302,826.26. That is on a basis of approximately $4.75 to $1. During the past year the company has erected a new power plant at the Sutherland division and a new warehouse at the Standard division at a cost of $172,202.80. These expansions were paid for without any additional financing. Total assets are placed at $3,924,459.25 with surplus at $599,412.42. The book value of the $10 par stock is $12 a share.

The surplus analysis on the balance sheet, shows that the surplus as of December 31, 1929, was $554,627.73. Profits during the first six months of 1930 were $202,005.26. Dividends of $135,000 have been paid during 1930 and a federal tax reserve of $22,220.57 set up. Net profits are thus $179,784.69, with an increase in the surplus of $44,784.69.

Not A Menace To American Labor

In contradiction of recent widespread assertions that importation of Russian pulp wood was a menace to American labor because of unfair competitive methods, the International Paper Company yesterday issued a statement to the effect that such importation gives additional assurance of life to the company's mills because it adds another source of supply of raw material. The statement also declares that Russian pulp wood is no cheaper than the Canadian product, and that the utilization of the Soviet imports is in the interests of American workmen rather than competitive with them.

"Almost all paper mills in northeastern United States are obliged to import each year a substantial part of the pulpwood required for their operation. Heretofore, this wood has come from Canada, but recently Russian pulpwood has appeared in the market and in 1930 International Paper Company entered into a contract for the purchase from Russia of a part of its requirements for its mills in this district.

"While this Russian pulpwood is no cheaper than the Canadian pulpwood, it has the advantage of adding another source of supply of raw material for the operation of the United States mills. This pulpwood, substantially the only supply available for import other than Canadian pulpwood, thus gives additional assurance of life to the Company's mills in the United States and of employment to their men. The utilization of Russian pulpwood is in the interests of American workmen rather than competitive with them.

"Needless to say, in making its contract for pulpwood from Russia, International Paper Company had no intimation that convict labor was employed in its manufacture. On the contrary, the Company received definite assurance that it was not, and in the absence of any knowledge of the information on which the Treasury Department has acted, the Company remains in the belief that the pulpwood is entitled to admission to this country.

"It is particularly important that the United States newsprint industry be deprived of no proper supply of raw material. Newsprint is not protected by tariff, and United States newsprint mills and American workmen in newsprint mills must meet not only the competition of Canadian mills with their unlimited supply of this raw material but also the competition of European mills which are now drawing very heavily upon Russian supplies of pulpwood. In the last ten years, the output of the Canadian mills has risen from half to more than double the output of their United States competitors, while the output of United States mills has been declining. From the point of view of the American workmen what is desirable is not the elimination of the Russian supply but rather assurances of its continuance.

Paper Makers' Directory of All Nations

The 39th annual issue of the Paper Makers' Directory of All Nations, published by Dean & Son, Ltd., London, England—has just been issued and will be of special interest to all who are in any way connected or have business relations with those in the paper and allied trades.

In it will be found detailed particulars regarding the paper, pulp and board mills of the world, such as location, productions, number and width of machines, tonnage output, power used, telegraphic address, etc., as well as lists of British wholesale stationers, paper merchants, waste paper merchants, rag merchants and paper stock dealers, china clay producers and merchants, cardboard box manufacturers, paper bag makers, and paper agents with the mills they represent; the mill productions too are classified under 400 trade headings, alphabetically arranged as to products, countries and mills.

The Classified Index to Commercial Prospectuses (pp. xiii to xxx) forms a valuable International Buyers' Guide, which should be consulted by all who have the control of purchases for mill, factory or other business; the names included in it are also alphabetically indexed on pp. 930 to 940.

THE EXTRA ADVANTAGE

IT often happens that the product which stands head and shoulders above competing articles benefits from an advantage in purchasing basic materials.

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Section of the
Technical Association of the Pulp and Paper Industry
Edited by Ronald G. Macdonald, Secretary

TAPPI Waste Committee Activities

The objective of the Waste Committee of the Technical Association is to collect data and information, and to draw definite conclusions regarding the various problems and factors involved in white water utilization in the various branches of the pulp and paper industry.

Assignments

In order to facilitate the work of the committee and prevent duplication, the following assignments have been made:

C. M. Baker, (Chairman) Engineer, American Paper and Pulp Association, New York, N. Y. White Water Utilization in Fine Writing Paper and Tissue Mills.

R. J. Schadt, Hawley Pulp and Paper Company, Oregon City, Ore. White Water Utilization in Groundwood and Newsprint Mills.

H. E. Brakewood, Ohio Boxboard Company, Rittman, Ohio; White Water Utilization in Paperboard Mills.

W. W. Galloway, Hagar Strawboard and Paper Company, Cedarville, Ohio; White Water Utilization in Strawboard Mills.

D. M. Wadsworth, Bogalusa Paper Company, Bogalusa, Louisiana; White Water Utilization in Kraft Mills.

R. T. Mann, Cherry River Paper Company, Richwood, West Virginia; White Water Utilization in Pulp Mills.

C. C. Irving, Falulah Paper Company, Fitchburg, Mass.; Wastes from De-Inking of Old Papers.

L. M. Booth, Booth Chemical Company, Elizabeth, N. J., P. O. Box 203; Chlorine and Other Methods of Slime Control.

A. W. Pesch, International Paper Company, Bastrop, La.; Analytical Methods in White Water Analyses.

E. R. Schafer, Associate Engineer, United States Forest Products Laboratory, Madison, Wis.; The Effect of White Water Utilization upon Quality.

Program

1. Each member of the committee will be expected to prepare a summary or report upon his assigned topic, and submit a copy to each other member of the committee not later than August 18, 1930. These will be in the form of preliminary reports or outlines and will be submitted to committee members only.

2. Each member will submit his comments and criticisms upon these preliminary reports at a meeting of the committee to be held during the Fall meeting of TAPPI, Erie, Pa., September 3, 4, and 5. If unable to attend this meeting, comments and criticisms should be submitted in writing to the chairman of the committee prior to this meeting.

3. A more definite outline of the committee's report to be prepared and presented at the annual meeting in February, will be developed at the committee meeting in Erie.

Reports

The following is suggested regarding all reports.

1. Reports should be brief and concise, more in the form of summaries than discussions.

2. They should include a summary of the present status of the subject under consideration based upon a study of the literature and other available data.

3. The following items should be considered in white water utilization:

(a) Methods

(b) Results, expressed preferably in financial returns.

(c) Difficulties encountered, and methods of overcoming them.

(d) Failures, and their causes.

4. Definite conclusions should be drawn particularly regarding the following items in white water utilization.

(a) Recommended method or methods.

(b) Results obtainable in economic utilization.

(c) Future studies or research desirable.

5. A bibliography of the subject.

Cooperation

It is expected that each member of the committee will refer to other members any data or information that he may have relating to the assigned subject. It is also hoped that the industry as a whole will cooperate by transmitting data and information pertinent to the subject to the various members of the committee. Without the cooperation of every member of the committee, and substantial assistance from the industry as a whole, little of actual value will be accomplished.

Sulphate Black Liquor Soap Disposal

SPECIAL INQUIRY No. 152

A member writes: "We are interested to know how sulphate mills dispose of the soap which collects in the black liquor storage tanks. Is it economically possible to run this through the process in any way to reclaim the chemicals?

"We do not want to wash this into the river on account of stream pollution as well as chemical loss."

All those replying to this inquiry will receive a transcript of the replies, in blank. If you can not answer this inquiry please pass it on to someone who can. Send replies to R. G. Macdonald, 18 East 41st Street, New York, N. Y.

Burkhardt Paper Mills Burned

CARLSTADT, N. J., August 4, 1930.—A fire of undetermined origin which broke out about six o'clock on the night of July 17 totally destroyed the Burkhardt Paper Mills, Inc., plant located at 13th Street, opposite Ferry Avenue, here. The plant was only recently established here for the production of plain and linen chip and news board, test board, indented packing paper and specialties. It was equipped with one 84-inch cylinder.

A New Metal For Chains

A new line of cast chains showing remarkable strength and durability in comparison with malleable chains has been placed on the market by Link-Belt Company, Indianapolis. These chains are sold under the registered trade name of Promal.

They are the result of extended research to provide longer life for drive and conveyor chains operating under heavy loads or abrasive conditions. Experimentation with cast chain metals, started about four years ago, led to the discovery of a new method of processing malleable iron which so altered its physical characteristics as to make it a distinctly new metal. This fact was recognized by giving it the distinctive name of Promal.

Compared with malleable iron, Promal has an average yield point of 45,000 lbs. as against 36,000 lbs.; an average ultimate strength of 65,000 lbs. as against 54,000 lbs.; average elongation of 14 per cent as against 18 per cent; and a Brinell hardness of 170-190 as against 110-130. Compared with mild cast steel, annealed, Promal has an average yield point of 45,000 lbs. as against 34,000 lbs.; an average ultimate strength of 65,000 lbs. as against 60,000 lbs.; an average elongation of 14 per cent as against 26 per cent; and a Brinell hardness of 170-190 as against 120-140.

Promal thus has to a high degree the qualities desirable in sprocket chain material; great toughness to resist extreme tension without permanent stretch; high strength in proportion to weight and size; and hardness that affords great resistance to abrasive wear. The combination of these characteristics in the new metal gives chains made of it their surprising durability.

Due to their higher Brinell hardness, Promal Chains withstand abrasive wear far better than the usual cast chain. It is also worthy of note that Promal has an exceptionally high yield point or elastic limit (25 per cent higher than that of average malleable iron) which engineers recognize as of greater importance than ultimate strength. In addition to having this high yield point Promal metal is tough and ductile so that it withstands shock and fatigue loads. High temperature reduces its tensile properties somewhat, but temperatures up to 1000° F. will not cause it to become brittle.

Although laboratory tests indicated the better wearing qualities of Promal Chains when they were first developed, they were withheld from the open market for over three years to permit extensive field tests. For these tests, many chains were tried out in various industries through the cooperation of Link-Belt customers. A check was then kept on the performance of Promal Chains while subjected to every-day usage. The results have uniformly sustantiated the laboratory tests.

For example, one Promal Chain in a Pennsylvania cement mill, running night and day in an atmosphere saturated with cement dust, has already lasted more than twice as long as the malleable chain used before and shows no evidence of serious wear.

In an Ohio plant a Promal Chain driving a tumbling barrel has lasted six times as long as the malleable chain it replaced and is still in operation. This particular drive affords a hard test because of the short center distance of 4 ft. between sprocket shafts, the large ratio of reduction (from a 13 tooth driving sprocket to a 78 tooth driven wheel) and an irregular, jerky load.

During the past three years a considerable quantity of all sizes of Promal Chain has been placed in actual service and performance data have been obtained covering practically all classes of duty. After thorough trial, several chain users have shifted their standard specifications from malleable iron to Promal Chain, among them some of the largest makers of agricultural implements. The qualities of the processed metal have even extended its use into special and jobbing work as, in one case, for certain parts on a high-priced automobile chassis.

The manufacturers of Promal expect that it will replace many elevator, conveyor and power transmitting chains where malleable iron chain has commonly been used. Promal Chains are particularly recommended for four general classes of service: (1) chain drives, elevators and conveyors operating under gritty or abrasive conditions; (2) chain drives where greater strength is required than the corresponding size of malleable iron chain provides; (3) drag, scraper and flight conveyors where the chain drags and is subject to abrasion; and (4) heavy duty drives of comparatively high speed, short centers and large sprocket ratios.

Details of the physical properties of Promal, with specifications and prices of Promal Chains may be obtained from Link-Belt Company, Indianapolis, by asking for Book No. 950.

A Volumetric Method for Sodium Sulphate in Sulphate Green Liquor

R.F.D. 2 Auburn, N. Y.

DEAR MR. MACDONALD:

The following analytical procedure was developed by the writer as part of an undergraduate problem in the pulp and paper course given by the New York State College of Forestry at Syracuse University. It is not new, inasmuch as variations are mentioned by Fresenius, Lunge and Keane, Schoch, and others. Its introduction into control work at sulphate pulp mills is recommended.

Acidify a 10 cc. sample with HCl (10%) and boil off hydrogen sulphide. Pipette 10 cc. of N/2 barium chloride, digest two minutes and filter. Neutralize filtrate with sodium hydroxide (it is convenient to add a slight excess of 10% sodium hydroxide, then to neutralize with N/10 HCl from a burette). Pipette 10 cc. of N/2 sodium carbonate, digest two minutes, and filter. Titrate filtrate with 0.1408 N/1 HCl to end point with methyl orange, boiling off carbon dioxide near end of titration. When solutions are made up exactly to the normalities recommended, the cubic centimeters of hydrochloric acid used will be numerically equal to the grams per liter of sodium sulphate in the green liquor sample.

Results obtained by this method agree with the standard gravimetric data within 1.5 per cent. A determination requires from ten to fifteen minutes and as many as ten analyses may be run by the same operator simultaneously. No extraordinary skill is required.

Sincerely yours,

ARCHIE W. KOON

Black-Clawson Company Joins TAPPI

The most recent company to join the Technical Association of the Pulp and Paper Industry is the Black-Clawson Company of Hamilton, Ohio, one of the best known and most progressive organizations serving the pulp and paper industry.

The original company was formed in 1873 and operated largely as a repair shop for several mills located in and around Hamilton. It was not long, however, before these contacts led to the design and building of the entire paper machine and in 1878 the company was incorporated and established on a permanent basis.

Since that time the growth has been gradual and with the acquisition of the Shartle Brothers Machine Company in 1926, Black-Clawson became the largest builders of paper mill equipment in America.

In January, 1930, after the retirement of F. C. Trowbridge, who had directed the policies of the company for many years, these duties fell upon the shoulders of H. L. Kutter, who is now president and general manager. Mr. Kutter will represent his company in TAPPI.

Hammermill Agents Meet August 27-29

The Nineteenth Annual Conference of Hammermill Agents will be held at Erie, Pa., August 27-29. An instructive and enjoyable program, as usual, is being arranged for this occasion.

Corrosion Resistant Alloys for Sulphite Mills

By Thomas H. Nelson[1]

While much has been written on the subject of corrosion in general before various technical societies, more particularly perhaps those interested in a study of general steel and engineering problems, it seems obvious, after reading various papers submitted before the annual technical session of the Canadian Pulp and Paper Association in Montreal quite recently, that the author may be pardoned in reviewing the subject of corrosion and the fundamental principles governing same for the general benefit of the industry, and in an honest endeavor to place before those interested the fundamental principles which govern the production of a satisfactory or unsatisfactory corrosion resistant alloy.

Corrosion Causes

At the present time there is much technical research into and considerable discussion of the phenomena of corrosion. There are claims that passivity is produced by an oxide film or coating on the material; others contend that a gaseous film of oxygen renders certain materials passive; then, of course, we have the acid and electrolytic theories.

Whatever may be the phenomena that render certain materials active or passive under corrosive conditions may still be debatable, but we do know that certain materials will withstand attack where others fail, and while thoroughly appreciating the work of these various investigators, the actual user is often more directly interested in whether a material will withstand this condition than with the explanation of the phenomena that governs the result.

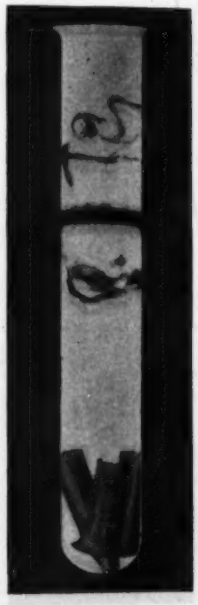


FIG. 1
Ring of Iron Rust Caught in Paper Wad.

If, however, for the purpose of this article, we consider corrosion from a "solubility" point of view, it is easy to understand the problems before us and the fundamental principles by which they can, if possible, be controlled without conflicting with any of these theories. Corrosion is generally expressed in terms such as "loss in weight" and "pitting," etc. These two expressions are sufficient for my purpose.

Few people realize that iron is soluble in water just the same as sugar or salt, but in a lesser degree. A simple experiment carried out on your office desk will illustrate this.

Take an ordinary "bright" carpenter's nail and place it (after weighing) in previously boiled water in a test tube. Pour in enough of the boiled water to cover the nail, and then ram in a pad of cotton wool or filter paper pulp, as illustrated, and continue the addition of water. (Fig. 1).

In the course of time a band of rust will form in the cotton wool, whereas the nail will remain bright.

The rust is formed in the intermediate band due to the fact that at this point ironized water, that is dissolved iron in water, comes in contact with oxygen available by the re-areation of the previously boiled water in the upper half of the test tube.

The experiment may be continued until flocculent rust begins to form in the water, beneath the cotton wool. What is established is that rust will form with the nail remaining bright, and careful weighing of the nail will show a distinct loss of weight, confirming the fact that iron is soluble in water, and that "rusting" is a secondary condition.

Therefore, if it is possible to add to iron some alloy that will render it insoluble in any particular solution, it is also rendered rustless and resistant to corrosion under this same condition.

Fig. 2 is a microphotograph of pure iron, and such material, were it possible to obtain commercially would be subject to dissolving in water and various other solutions. However, as it is impossible

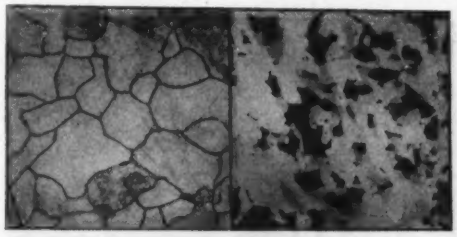


FIG. 2
Similar Crystalline Grains in Wrought Iron (left); Dissimilar Grains in Mild Steel (right).

to obtain pure iron commercially we are confronted with low carbon material containing other elements, such as illustrated in Fig. 3.

And materials of this type would be subject not only to destruction due to solubility, but also to pitting due to the electrolytic action produced between the carbides of iron and the iron free from carbon immediately adjacent. Therefore, this photograph illustrates micrographically a material which would be subject to both types of corrosion with which we are familiar.

The selective corrosion of one of the two dissimilar constituents of which steel is composed causes pits to form and a rusted steel surface, when rebrightened, is still more or less pitted. After

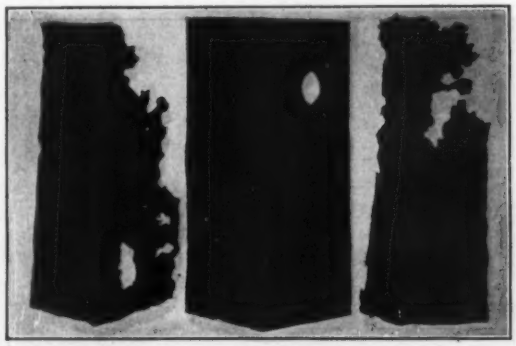


FIG. 3
Comparative Rusting of Iron (Center Piece) and Steel.

prolonged rusting the pits develop into perforations. Pure wrought iron does not develop pits to anything like the same extent; this is the main distinction between the rusting of iron and steel. Photographs of three pieces of rusted angles are reproduced in Fig. 3. The two outer angles were made of steel; the centre one of wrought iron.

Stainless Steel

When Brearley, therefore, discovered stainless steel he discovered that chromium in certain proportions in iron rendered iron insoluble in water and many acid and alkaline solutions.

* Presented at the annual meeting of TAPPI, Pennsylvania Hotel, New York, N. Y., February 19, 1930.
[1] Consulting Metallurgist, Philadelphia, Pa.

But to obtain the ideal condition in the 12 to 14 per cent chromium material, containing approximately .3 carbon, he also found it necessary to heat treat it, that is heating the material to such a temperature above the critical that he could obtain complete diffusion of the carbides and thus by quenching obtain a homogeneous material.

While, therefore, there is a tendency to regard stainless, rustless or corrosion resistant materials as a combination of various alloys in iron and around which combinations there is a glorious field for high pressure salesmanship and the weaving of fantastic and in many cases erroneous theories, putting all this misleading data on one side, even the lay mind can readily grasp that if it is possible to establish a principle, then surely this principle can be worked out to a very definite proportion in such fields where the formula is of any value whatever. By this I mean that if a principle has been firmly established that a definite amount of chromium in iron will render that iron combination insoluble in water, it is reasonable to assume, because it has already been proven, that this combination of chromium and iron, or some other combination of chromium and iron may prove insoluble in other corrosive liquids. In other words what I particularly wish to make clear is the fact that after something like fourteen years study of this subject I am firmly convinced that there is no one alloy combination that can be regarded either by manufacturer or user as the last word so far as resistance to corrosion under various conditions is concerned. Always we have before us at least two outstanding cases of failure. They are the destruction of material by actual solubility and the destruction due to electrolytic action. Do not these two prime causes of failure point very clearly, indeed, to the fact that the ideal alloy would be one which was insoluble and so constituted that it either was naturally, or could be, by heat treatment, produced with a perfectly homogeneous structure. This, of course, would represent an ideal, and such an alloy would be perfectly immune to attack in the presence of those corrosive conditions where the material was neither soluble nor subject to electrolytic action. Just for a moment let us

FIG. 4

review some of the outstanding developments of the last few years, for when all is said and done there are many factors to consider besides the production of the alloy itself.

So called stainless steel made its first appearance in the form of a table knife; the chemical analysis of which was approximately:

Carbon	.25 to .35
Chromium	11 to 14 per cent

This material, obviously, had to be produced in bar form. It was, therefore, malleable and of such a composition that it was capable of being hardened and tempered similar to ordinary tool steel, except, of course, at different temperatures. This type of material flourished for a considerable time. The next radical departure was the production of so-called stainless iron. The first large tonnage of this used and demonstrated to satisfaction in the structural field was that used in the nitric acid plant built for E. I. DuPont DeNemours, at Repauno near Gibbstown, New Jersey.

Now while on this subject of so called "Stainless Iron," the author would like to take this opportunity of clearing the air somewhat on its definition. When Brearley patented a material covering from 9 to 16 per cent chromium, he patented a range

FIG. 5

the chromium contents of which established two factors; one that he considered 9 per cent of chromium the minimum essential, and, I believe he realized the difficulty of heat treating alloys containing over 16 per cent chromium; because, when passing a chromium content of 16 per cent, with reasonable low carbons, the material is practically immune to hardening by quenching to temperatures which can be commercially controlled. By this I mean, that when quenching an alloy containing 18 per cent chromium with .15 or .2 of carbon from temperatures under 2000 deg. F. the result micrographically would reveal that the material was substantially pearlitic, soft and ductile (providing the material had been raised rapidly to temperature and quenched but if the material had been held at temperature for any length of time, the alloy when fractured, shows little ductility and an extremely coarse grain structure).

Those who were associated with the early fabricated structures of chromium iron that were built in this country understand full well the various difficulties that were experienced in manufacture. However, there are many such installations in the country, and abroad, today built from a material of the following approximate analysis:

Carbon	under .10 per cent
Silicon	.25 to 1.25
Chromium	16 to 19 per cent

And it should be understood very clearly that this material is substantially in the pearlitic condition. By raising the chromium content two other features were brought out very sharply: First—That the higher chromium content produced a material which was insoluble in nitric acid despite the fact that micrographically it was not a homogeneous structure (i.e. pearlitic condition in chromium matrix). Second—That the increased chromium content removed air hardening tendencies within commercial working ranges and made possible the production of such articles as bolts, angles, channels, I-beams, rivets and the general assembly of these articles by fabricators who were prepared to install scientific equipment and make a study of the subject.

Fig. 4 shows a photograph of a typical chrome iron digester such as is used in the cellulose industry.

Before passing on I consider that one extremely important

point was brought out at this stage and that is that the increased chromium content was apparently sufficient to render the alloy insoluble and at the same time apparently immune from electrolytic action, because there is no doubt whatever, as will be seen from the photograph in Fig. 5, that this material was not what would be called homogeneous and is distinctly different from the austenitic type, which, at the present time, is being so strongly advocated.

Before leaving this subject, therefore, let us keep the salient points in mind.

First, that one chromium content was satisfactory in the form of table cutlery, where the corrosive conditions are not very serious, and this material was capable of being hardened and tempered in such a manner as to produce a homogeneous structure which produced the following result: An insoluble material under the conditions it had to meet, and a homogeneous material produced by heat treatment.

Second, a type of material containing considerably higher chromium and invariably higher silicon which was not capable of being hardened with ordinary commercial limits[3]; further, which did not have a homogeneous structure, but which does prove insoluble in contact with nitric acid and many other powerful corrosive liquids.

Physical Properties of 18 and 8

Below is a table of the physical properties of material known to the trade as 18 and 8, these numerals representing Chromium 18 per cent and Nickel 8 per cent.

In the hot worked or as rolled condition the physical properties would be within the following range:

Tensile	85,000 to 110,000 lbs. per sq. inch
Yield Point	50,000 to 70,000 lbs. per sq. inch
Elong. % in 2"	25% to 30%
Red. of area	45% to 55%
Brinell Hardness	150 to 200

After heat treatment such as air or water quenching from 2000° to 21,000° F. the physical properties would approximate the following:

Tensile	90,000 to 95,000 lbs. per sq. inch
Yield Point	30,000 to 40,000 lbs. per sq. inch
Elong. % in 2"	50% to 60%
Red. of area	60% to 70%
Brinell Hardness	130 to 150

Advantage of Adding Nickel

It is also a fact that the nickel chromium alloys are not so difficult for the steel manufacturer to produce and are more amenable to general working. As an instance, they are welded much more readily than the straight chronium alloys, such welds being reasonably tough and ductile. Much, however, can be said on the question of welding and its application to serious corrosion problems, but such comments might possibly be misunderstood and beyond the scope of this paper.

In other words, nickel added to these alloys has proven a friend of all interested in the manufacture and fabrication and this, at times, leads to somewhat dangerous possibilities. For, would it not be reasonable to assume that one would much more willingly develop the sale of an alloy easy to produce against one that was somewhat more difficult to produce. The user, however, with the corrosion problem in front of him is not always so much concerned with the methods of manufacturing the product, as he is with the ultimate resistance of the product to his particular corrosive condition.

A glance at some of the recently tabulated data by some of the eminent metallurgists who have made a study of this subject have, in many cases, attempted to show the resistance of the straight chromium and the nickel chromium alloys under certain commercial corrosive solutions and these, in some instances, have a tendency to reflect in favor of the nickel chromium alloys. However, a careful study of such data will often reveal the fact that such comparisons are rarely fair and often rather confuse than clarify the issue. For instance, a paper recently published gives three columns in which the attack of certain solutions are given on carbon steel, stainless steel and 18 and 8. The stainless steel containing approximately 12 to 14 per cent chromium only, whereas the 18 and 8, of course, contains 18 per cent chromium plus the 8 per cent nickel content. I believe that it would have been much fairer and much less confusing in all such instances to have taken 18 per cent chromium with 18 per cent chromium and 8 per cent nickel, and not one chromium content against another plus a second alloy. Had this been the case the instances where conditions were shown in favor of the nickel chromium would, I am confident, have been considerably reduced. Let it be understood that I am interested in the development of *all* types of corrosion resistant alloys, but as a metallurgist I particularly like to see such a vast subject approached with true scientific principles at heart, rather than to see commercialism and attempts at standardization rushed into the field before the true scientific or metallurgical information has been established. That the nickel-chromium type of material has come to stay with us and has made possible many things that previously were unattainable is beyond question. That the development of the future will be substantially amongst the chrome-nickel alloys I do not doubt, nor would I make one single effort to prevent, but I do feel that we should know something of the principles involved before we fall too readily for a more enticing piece of bait.

In leaving this phase of the subject let me ask a question that I have repeatedly asked before, which is: Do any of the nickel-chromium alloys today offered contain less than the chromium content originally designated as necessary to produce an insoluble alloy?

In summarizing, therefore, my views on the type of alloys known as the 18 and 8, may I say that the material possesses two fundamentally sound principles which are: First: This alloy is insoluble under many conditions. Second: It is homogeneous throughout when the combination is such that it produces a true austenitic condition.

So far the object of this paper has been to point out to those interested just what an alloy addition to iron is expected to do and then to stress where possible the production of a homogeneous material. However, I have also shown, as is evidenced by the various high chrome iron nitric acid installations in use through out the country, that there may be alloys that are insoluble and perfectly satisfactory, but not necessarily of a homogeneous structure, by this I mean austenitic.

Corrosion Test Interpretations

If, therefore, I have succeeded in making myself clear thus far it will not be difficult to understand that an alloy combination which may be satisfactory in a certain strength of solution and within a certain temperature cycle, may not be satisfactory if the strength of that solution or the temperature cycle were changed. And, if some further thought is given to this particular statement, will it not explain many of the conflicting reports which are repeatedly made concerning the success or failure of a material in certain industries, say in one manufacturing plant as against another. Within the author's own experience I have seen alloys in the paper pulp industry giving perfectly satisfactory results and quite immune to attack in one phase of the process only to meet with very inferior results at another stage, and what does this condition lead to. If it were more clearly understood how few metallurgists and chemists have made a study of these alloys and who have had the opportunity of observing their behavior in commercial processes, it is not quite so surprising to realize that not so much is known as we should like, for it is practically within

[3] For the information of the reader I may say that material of the analysis

C.	Si.	Man.	Cr.	Ni.
.09	1.28	.35	18.50	.20

when quenched after heating for 30 minutes at 2,000 deg. F. still showed pearlitic structure. When raised to the melting point and the liquid metal dropped into iced cold water, an austenitic structure with the carbides entirely in solution was obtained.

the last five or six years only that this phase of the industry has been really seriously developed.

Far too often a sample piece is given out indiscriminately to a particular industry and a report either favorable or unfavorable obtained. This frequently passes into the hands of the manufacturer and the favorable instances immediately become broadcast in an endeavor to boost sales. The steel manufacturer cannot be altogether blamed for this particular state of affairs, for the simple reason that his knowledge of industries other than his own are usually not particularly wide, but the indiscriminate passing out of information that a certain brand of material will withstand the corrosive action of, for instance, the sulphite industry, has led to very conflicting results. How many of us present know of instances where manufacturers are recommending alloys as satisfactory that the user knows to be unsatisfactory and what serious or real attempt has been made to get down to the fundamental principles that will lead to the establishing of a satisfactory alloy for the industry. I have travelled extensively through the United States and Canada and have found as many favorable as unfavorable reports on the behavior of the 18 and 8 type of alloy, with and without alloy modification throughout the paper pulp industry. While those who are making a study of the subject would be extremely cautious in offering a definite chemical analysis that they would consider satisfactory for the entire industry, we have advertising data available on every hand recommending this brand or that brand for use under these particular conditions. And this is the state of affairs today.

Sulphite Industry Complicated

The sulphite industry is to say the least quite complicated and the all too prevalent tendency of individuals to assume that one particular condition is responsible for corrosion has been evidenced in many cases.

When you hear the subject of corrosion discussed as applied to the sulphite industry you invariably hear the conclusion advanced that SO_2 and H_2SO_3 are responsible for the corrosive attack and little attention is paid to the other chemicals in, or the temperature of the solution which may either accelerate or retard corrosion.

I have known synthetic solutions of H_2SO_3 used as a means of determining the attack of an alloy and if it proved satisfactory for use in the sulphite process.

Without commenting any further on this subject, may I cite an instance from which you may draw your own conclusions. It is an acknowledged fact that neither chromium iron nor the nickel chromium alloys so far discussed in this article are substantially resistant to sulphuric acid solutions, yet in copper leaching, where a sulphuric acid solution contains copper and other material, chromium iron will resist the attack of this solution indefinitely within certain temperature ranges. Knowing this to be a fact, therefore, does it not seem unreasonable to so rapidly assume that any particular content of a complex solution must, of necessity, be a source of attack? And, is it not reasonable to assume that in a complex solution there may be matter which might accelerate or retard activity. In this thought also is there not to be found some explanation of varying attacks at various stages of a process where acid or alkaline concentration vary. As a further instance and to take my audience out of the field of liquid corrosion entirely for a few moments let me explain that much work has been done with chrome nickel and nickel-chrome alloys at elevated temperatures in the presence of industrial gases and it is now an accepted fact, which has been repeatedly demonstrated, that at high temperatures where substantial percentages of SO_2 gases may be present, alloys containing substantially more nickel than chromium are seriously attacked, whereas alloys wherein chromium substantially predominates are giving satisfactory results. In-as-much, however, as this paper is presented to the paper pulp industry let us try and bring some of these thoughts into focus on this particular subject.

In advancing these thoughts previously some of my readers may have gathered the erroneous impression that I do not fully appreciate and realize the value of nickel. Therefore, let me make this position quite clear, all that has been said in regard to iron chromium alloys is equally true of iron nickel alloys, when it is found that the nickel addition to iron improves its resistance to corrosion. This is well evidenced in the recent development by one of our largest steel manufacturers of the high nickel-silicon alloys, some of which contain chromium and others without. Then, of course, there are various other alloys such as monel metal, etc. Generally speaking, however, all fall within a type of material wherein chromium is the predominating alloy, or where nickel is the predominating alloy and within these alloys are materials that are pearlitic, magnetic, and hardenable; and materials which are austenitic, non-magnetic and unhardenable. To these types of materials other additions have been repeatedly made by various patentees and manufacturers, such as the addition of silicon, tungsten, molybdenum, vanadium, titanium, etc., so that today on advocating a corrosion resistant alloy it becomes almost second nature to state the alloy content for the type of material that is desired.

If, therefore, I have made my point thoroughly clear it should be obvious, though it is very seldom stated, that the increased alloy content viewed from another angle means automatically a lower residual iron content and very interesting data becomes immediately available. If, instead of considering the alloy content for a moment, we look at alloys and their resistance to corrosion from a residual iron content; as an instance, we find that for ordinary atmospheric corrosion an alloy with a residual iron content as high as 88 per cent will work quite satisfactorily if the alloy is put into suitable condition. In the nitric acid fields where the corrosive solution is more powerful, then we find approximately 80 per cent to 82 per cent of iron becomes, perhaps, the most desirable. When we come to some of the very serious conditions we find that the results are extremely erratic, where the residual iron content exceeds 70 per cent. This, I think, is found particularly true of the sulphite process. I mean no injury to any manufacturer of the 18 and 8 type of alloy when I state the results that have come before me in regard to the performance of this material in the sulphite process have been very irregular, and I will frankly state that when other alloys such as molybdenum, silicon, etc., have been added these show quite a little improvement, and in this case it will be noticed that such alloys are usually present to the extent of 2 to 3 per cent, thereby producing a final alloy with the residual iron content of approximately 70 to 72 per cent, and I feel that the reason for this improvement is perhaps not so much dependent upon the three or four alloys added, as upon the reduction of the amount of residual iron present. I do, however, believe that in some particular instances such as the addition of silicon, molybdenum and tungsten, these alloys have the ability in conjunction with chrome, or chrome and nickel to increase the passivity or insolubility of the ultimate alloy to a very marked extent, so much so that there are instances where 14 per cent of chromium with say 2 per cent of molybdenum or tungsten will often perform equally as well as 20 or 22 per cent of straight chromium alloys.

The alloys available at the present time are comparatively simple in comparison with the complex solutions of the sulphite industry, but such data as I have been able to collect during the last two or three years leaves me almost convinced that the alloy giving the most consistent results in respect to resistance to corrosion in the sulphite industry is one in which the residual iron content is not more than 70 per cent iron and probably not more than 65 per cent. The alloy that I particularly have in mind is one containing approximately 20 to 25 per cent chromium, 8 to 10 per cent nickel, with the addition of silicon or molybdenum. This type of alloy, so far, has given much more consistent results in various parts of this type of installation than the type of material with a lower alloy content.

The foregoing remarks of the author may be misunderstood to infer that all corrosion problems could be handled by some combination of either chrome with iron, nickel with iron or chromium and nickel with iron. Such, however, is not the thought that I wish to convey and would be losing sight entirely of the fact that the introduction of such other elements as silicon, molybdenum, copper, tungsten, etc., have been and are serving a very useful purpose. In just what capacity these added elements function it is not quite clear, because in many cases these elements in iron alone do not produce a corrosion resistant material. Therefore, I prefer, at this stage, to look upon them as intensifiers in the sense that they will often produce an increased state of insolubility or passivity in conjunction with either the chrome-iron alloys; nickel-iron or the nickel-chrome-iron alloys.

Heat Treatment

I have been frequently asked to express an opinion upon the virtues of heat treatment of the relative carbon contents of alloys for use in this particular field and my views are entirely personal and are probably not in accord with many.

Let me state that sufficient has been said in this paper as to the value I place upon an insoluble alloy and a homogeneous structure, such I have stated would be an ideal. Experience, however, has led me to believe that ideals are by no means essential and this homogeneity as exhibited micrographically does not always seem to be essential to obtain insolubility and freedom from electrolytic action if the alloy content present be sufficient to take care of these conditions. To reiterate this is fairly well explained in the pearlitic chromium irons working satisfactorily in the nitric acid fields.

The question often arises as to what is the best and most economical method of approaching this subject, which is in itself strange, when so many materials are already offered that are claimed to be satisfactory; my answer to this question is—keep in mind the principles that I have stressed in this paper in an endeavor to make clear that the material must be so constituted chemically as to remain insoluble under the most serious conditions of corrosion within the installation, and this condition usually, but by no means always, is a phase where metal will become alternately wet and dry in the solutions of highest concentrations with the least foreign matter present and whereby by virtue of them being alternately wet and dry they are subject to attack not only by liquid but also by the gases involved. Added to this it is invariably true that the higher temperature ranges are the areas most seriously attacked.

In closing this article I realize full well that such a problem cannot be looked at entirely from the angle of the chemist and metallurgist, but the satisfactory alloy must, of course, be malleable and capable of being fabricated into such articles as the general structural engineer requires and often a limitation is enforced by this particular fact. However, we are likely in some phases of the industry to be confronted with a situation wherein it is not possible to obtain the ideal alloy, due to the fact that such an alloy might be impossible of fabrication into the various forms in which the ultimate material was required. In such instances it will become necessary to compromise, and, where we cannot obtain an alloy which is entirely immune to attack, obtain that which is available in all the forms that are requisite and necessary for the building of installations and which has the maximum resistance.

With regard to castings, this phase of the industry is probably the weakest link in the chain of this type of alloy, due to the many foundry problems surrounding their successful manufacture. Usually castings will contain a higher carbon content and should on this account also carry a somewhat higher alloy content. However, this subject would form the basis of an article in itself, and is really beyond the scope of this paper.

Vacuum Forming Automatic Paper Machine *

By W. H. Millspaugh [1]

I shall only describe the "New" vacuum forming machine by comparing its operation with cylinder and fourdrinier machines, calling attention to differences and similarities and leave reports of results and technical performances to those who follow me in its ultimate development. I do not wish to leave a wrong impression as to the word "Development." There are innumerable combinations to adapt the apparatus to the intended use; single, duplex, triplex or many plies, heavy and light papers, speed, etc. Wires and felts will be arranged differently as the needs of the customer are to be met; vats and flow boxes changed, adjusted and designed for the different needs. The 60-inch machine at Sandusky was arranged to demonstrate possibilities, and particularly to show its utility for those grades and to those customers offering the least sales resistance. Also to prove that papers may be made that otherwise could not be produced, to show the wet end possibilities with a different press part and the practicability of starting and driving driers with little power and without gears. Visitors to Sandusky are rather to look into an adaption suited to their needs than to expect to see just what they need in detail.

Novelty of the Machine

The present machine is designated "new." Wherein is it new? What practical utility resides in its newness? The sheet of pulp is gathered on the wire by difference in pressure between the dilute pulp outside and the interior of the cylinder. The same description applies to any conventional cylinder machine. New results in characters of sheet alone would designate the new machine as novel, the speed at which the sheet may be made dubs it useful, insuring its patentability to go no further, even if it were but a combination of parts designated in the art as "old"—which it is not.

A brief review of present cylinder and fourdrinier machines is of interest to a layman and by those in the industry may be excused. With a cylinder of conventional or common construction, the difference between the outer and inner pressures is only the difference in the water levels maintained in the vat outside the cylinder and the level maintained within the cylinder and is limited by the diameter of the cylinder if unassisted by artificially reducing the inner pressure through air removal. This has been resorted to to a slight extent and disclosed by numerous patents. The wire covering this old type of cylinder is sewed on over backing wire and is fixed, easily filling with pulp while wax and pitch are forced into the wire meshes by the pressure of the couch roll. On a cylinder machine the sheet formation continues as long as water passes through the deposited fibers. This is true of the new machine, as distinguished from the fourdrinier on the wire of which all the pulp is spread at once and removal of the water is a gradual process by assistance of table rolls, shake and flat suction boxes with a different result than with the cylinder in the sheet characteristics.

Details of Wet End

The new machine, wet end, is a large perforated shell suction roll having square countersinks to secure maximum drainage, a short wire made endless (as is the longer fourdrinier wire) passes over the suction roll and away from it in any of the many directions the particular service dictates. It is tensioned and guided as is a fourdrinier wire. The vacuum compartments of the suction box or boxes within the perforate shell are arranged to form the sheet

* Presented at the annual meeting of TAPPI, Pennsylvania Hotel, New York, N. Y., Feb. 18, 1930.

[1] Member TAPPI, Consulting engineer, Sandusky, Ohio.

with slight initial pressure, or only by the head of stock, increasing the pressure by steps as the formation proceeds or by one constant pressure as the character of the sheet being formed demands. After the sheet has been thus formed high vacuum is used if sheet is a single ply, much as with suction couch rolls of the fourdrinier machines. If a multiple sheet is being made the last suction box is regulated to temper the moisture remaining in the sheet to secure proper bonding, thus permitting multiple sheets to be run at high speed without crushing. The forming box and vat are simple and are placed directly against but not in actual contact with the forming roll. After the proper amount of pulp is deposited it is held firmly by vacuum on the wire as it emerges from the vat regardless of the speed of the machine, therefore, a better and more even formation is had than on an old type cylinder mold from which the pulp washes and slides, producing a lumpy or wild sheet, particularly if the machine is running at high speed. Unchanged by mechanical means, when making a single ply sheet the lay of the fibers is normally with the run of the sheet, but their disposition may be changed by mechanical means.

A sheet may be made duplex with wire sides in or wire sides out, as desired, by proper arrangement of wires and felts. A triplex sheet may be made with cheap center and fine faces, and as many plies may be combined as desired. The individual sheets are transferred from the forming wires to the felt by a suction roll, called a transfer roll. Usually two sheets are united on the wire before transfer to the felt, but may be united on the felts before passing into the suction presses. The formation of the sheet is controlled by vacuum, as is the transfer of the sheet from the wires. These mechanical operations are under complete control. The machine may be quite properly called "automatic" to and through the presses.

In the Sandusky machine the presses are stacked as are calendar rolls. The middle one of the rolls is in fixed bearings. The bottom roll is pivoted to force the bottom felt up and against the middle roll, thus applying pressure the same as in a first press. The bottom suction roll ordinarily has but one suction. The middle or fixed roll has two boxes, the lower one acting merely as a transfer roll to insure the sheet leaving the bottom felt and following the top felt. The third roll on top of the middle one is a plain roll and acts like any plain top roll with any suction press. It will thus be seen that the machine has two suction press rolls as do many of the modern fourdrinier machines making news print, but that very little room is required and but three rolls instead of four are needed. The sheet is taken from the plain top roll in the ordinary manner to the driers which are fitted with rope carriers.

Drier Section

The Sandusky machine has twenty driers, each four feet in diameter. Two of the driers at one end of the machine are geared together in the ordinary manner, top and bottom. All other drier gears are omitted. The driers are mounted on a specially patented antifriction type bearing. Through the omission of the gears, the rear of the machine is as accessible as the front. No difficulty has been noted in driving the driers with felt. They start readily and the draw of the paper through the driers is perfect. This patented arrangement of antifriction bearings with the omission of gears will undoubtedly be widely adopted as the gears are useless, dangerous and cost money.

In the making of boxboard, roofing felts, etc., where drier felts are not required, the driers are driven by heavy endless bands or belts which drive bands also carry the sheet of paper through the machine. Comparing this new type machine with the fourdrinier machine of modern construction equipped with a large suction couch roll, it will be noted from the above description that if it be desired to make a single ply sheet the flow box is placed directly against the suction couch roll. Everything preceding the suction couch roll, flat suction boxes, table rolls, deckel straps and frames, and pans are entirely omitted. A much shorter building therefore houses such a wet end. The presses are located close to the vacuum forming rolls and being stacked additional space is saved. Two-thirds or three-fourths of the space required for conventional fourdrinier wet end and press part is thus saved. For many grades of paper and in many situations there can be no doubt as to practical utility of the machine and the improvement in character of product made. Judging by the time required to convince a considerable portion of the paper industry of the utility of suction couch and suction press rolls on fourdrinier machines, I do not expect a quick acceptance of the new machine in all its features, even for those grades for which it has been proven peculiarly adapted. I do trust, however, that in a reasonable time it will find its place wherever it be found better than old equipment.

Paper Permanence Literature Outline*

By M. D. Bardeen [1]

The question of the cause and prevention of deterioration in paper is not so recent as might be supposed. According to the bibliography recently compiled by Mr. Walton of the New York Public Library, there is a reference to this matter in Pliny's Naturalis Historia, about 60 A.D. Quoting from a work by Cassius Hemina, Pliny states that Hemina broke into a grave and found books of papyrus in a good state of preservation. The period of interment is given as 535 years and the remarkable preservation of the paper was attributed to the presence of citrus leaves, whose bitterness prevented the attack of worms and so forth.

The more recent investigations of paper permanence began about 1890 when a consciousness of the danger of extinction to a great part of the literature of the period was voiced at about the same time by Martens in Germany and by Johnson in the New York Library Journal. The latter pointed out that in the library there were books made from cotton 50 years before that were in perfect condition while volumes only a few years old made from wood pulp were in a grievous state of deterioration. In a note is a statement that Justin Windsor tried in vain to induce editors of the leading Boston daily newspapers to publish a few copies of each issue on good paper.

It is interesting to note in this regard that the Brooklyn Daily Eagle in 1913 offered to furnish to libraries a special edition on permanent paper but that it was not until 1926 when the New York Times and the Chicago Tribune brought out their all rag library editions that any move of this kind became general.

Some of the methods used to preserve inadequate paper were treating with gummite, spraying with or dipping in cellulose acetate, treating with varnish or hemp tissue, pasting on cambric, or covering with condenser, rope, or Japanese tissue.

Herzberg discussed the durability of rag paper in an article written in 1895. He felt that the conclusion that the mere manufacture from rags is an essential and sufficient condition to ensure permanence was too far reaching and stated that the danger to permanence in rag paper lies in the incomplete removal of the decomposition products introduced in the process of manufacture, especially calcium chloride, from bleaching. He also mentioned antichlors and rosin size as possible causes of deterioration. With regard to the durability of papers made wholly or in part from wood fiber he drew no other conclusion than that ground wood

* Presented at the annual meeting of TAPPI, Pennsylvania Hotel, New York, N. Y., Feb. 19, 1930.

[1] Member TAPPI; Chief chemist, Lee Paper Company.

and unbleached cellulose are known to deteriorate rapidly. A year later Cross, in the Journal of the Royal Society of Arts, stated, in discussing durability of various paper making fibers, that papers from ground wood are rapidly attacked by atmospheric oxygen and undergo a veritable combustion accompanied by discoloration and deterioration.

In 1898 a committee of the Royal Society reported on an investigation of the relative permanence of wood and esparto as opposed to cotton and linen as paper making material. They concluded that disintegration is the result of chemical change in the fiber itself and in some cases could be traced to illuminating gas in the atmosphere in which the paper was stored. In the case of rag paper the effects seemed to have been caused by acid bodies, either from residues left in the process of manufacture, from chemical reaction in the finished paper, or from products of gas consumption. With papers made from mechanical wood pulp disintegration was thought to be due to oxidation accompanied by an alkaline reaction of the paper. They set 10 per cent mineral loading as the extreme limit for permanent papers.

It is interesting to note in this regard that in 1904 the German government dropped the ash specification from government paper specifications on the theory that there is no reason why a paper containing mineral filler should deteriorate more rapidly than one without if it have initially the same physical properties.

In 1903 Arthur D. Little emphasized the difference between ground wood papers and those made from properly purified wood fibers, pointing out that the latter are much more permanent than ground wood papers. He also stated that the unregulated use of bleaching agents is responsible for the destruction of more high grade paper than any other cause, and warned against brilliantly white papers unless it is absolutely certain that the fiber substance has not been affected by bleaching and that all bleach residues and chemicals have been removed.

In 1905 Korschilgen drew the distinction between papers made from old and from new rags, stating that permanent papers should be made from strong, sound rags. He believed that tensile strength in conjunction with folding endurance gives an indication of durability and stated that weak or old rag fibers, deficient beating, bad felting, over drying, and hydrocellulose are detected by the fold test. Wood cellulose and other rag substitutes showed up badly under this test.

This distinction between grades of any given type of fiber and the methods of preparation is further strengthened by an example found by the Materialprufungsamt which in examining books in the Library of the University of Berlin for permanence found a book 26 years old made from 40 per cent linen, 30 per cent cotton, 25 per cent wood pulp, and 5 per cent straw, and with an ash of 21 per cent, which was falling to pieces. This paper was 70 per cent rag and contained no lignified fibers and was nevertheless in a bad state of preservation.

Herzberg in 1908 made an examination of 435 samples submitted by Berlin University Library from works that should have been of permanent record. A small percentage of these were printed on all rag paper and the rest on paper of varying wood composition. Only 1.6 per cent fulfilled the strength specifications and folding endurance was found to be the weakest point. He concluded that fiber composition is not sufficient specification since some of the rag papers showed poor tests, and that the quality of the raw materials and their suitable treatment in the process of manufacture are more important and can only be ensured by a strength specification. He recommended that in the case of treatises, valuable books and so forth a pure rag paper of definite strength specification be used, and in the case of periodicals any non lignified fiber paper of the same strength class would be permissible.

In a report to the Department of Agriculture in 1909 on durability and economy in paper for permanent records, Wiley and Merriam recommended a small edition of each publication on a paper of at least 75 per cent rag stock, strong and well made. They stated that low quality or severely treated rags may yield a weaker or less durable paper than is produced from materials which in the original state are inferior. Factors in the manufacturing process listed as causes of deterioration were undercooking, overcooking, rapid drying and excess rosin size and loading materials.

In 1926 Gosta Hall at the Swedish Government Testing Institute exposed a large number of samples to sunlight and a temperature of 100 deg. C. for various periods with a view to determining permanency. Tests were made for folding endurance and copper number. He concluded that bleached sulphite is less permanent than rag and that rosin sizing contributed to the deterioration of paper. He also studied the effect of acidity measurements and introduced a method of measurement which is now often used. He also drew a distinction between beater acidity and that due to tub sizing.

Hoffman in 1928 studied the effect of residual acid on deterioration of paper and concluded that residual acid in excess of that represented by a pH of 4.7 progressively contributes to the deterioration of paper.

Dr. Bertzen emphasized the fact that rags are more durable and possess more original strength than wood fibers. He stated that the copper number is an unreliable test for cellulose and that the alpha cellulose test is significant only when rating the alpha content of fibers of the same origin.

The committee of the Royal Society aforementioned in its report of 1898 also, as a general conclusion as to the discoloration of paper, stated that in ordinary paper, other than that made from mechanical pulp, under normal conditions of storage, discoloration is proportional to the content of rosin sizing and the method of fixing it in the ordinary process of engine sizing. They recommended a minimum of rosin sizing and residual chlorides.

Klemm in 1901 advanced the theory that discoloration in paper other than that made from wood is caused by the formation of light sensitive iron-rosin soaps.

In 1912 Schoeller in Germany made a study of discoloration in paper fibers and found that papers containing mechanical wood pulp, straw, and esparto discolor rapidly, papers from chemical wood pulp discolor less rapidly, while papers from rags suffer only slight discoloration. Unsized, unbleached cotton or linen half stuff showed no tendency to discolor. He concluded that rosin size is the chief cause of discoloration due to polymerization or auto oxidation and patented a method for the pre-bleaching of rosin size.

Zschokke, working independently of Schoeller, confirmed his conclusion that rosin size is the cause of discoloration. The change, he believed, to be due to heat and light rather than atmospheric oxidation. He disagreed with Klemm in the relation of discoloration to iron content. He mentioned the heating test as the best indication of a tendency to discolor but in no way as a quantitative test. He stated that less than 1 per cent rosin size will not seriously discolor.

Hitchins, in 1918, subjected samples to light, moist heat, and dry heat and measured the yellowing by means of a photometer. Sheets without size showed practically no yellowing and the degree of yellowing increased with the rosin size content. He also prepared sheets with various contents of rosin, iron, and gelatine and found that the degree of yellowing was proportionate to the amount of iron introduced.

An article in the Paper Makers Monthly Journal in the same year presented lignin and iron-rosin soaps as the main causes of discoloration and stated that light and heat accelerate the process of discoloration.

Sindall in his "Paper Technology" attributes discoloration and deterioration to oxidation of the non-cellulose constituents of paper including lignin, rosin in the presence of light, and glue and starch in the presence of moisture.

Current Paper Trade Literature

Abstracts of Articles and Notes of Papermaking Inventions Compiled by the Committee on Abstracts and Bibliography of the Technical Association of the Pulp and Paper Industry

Clarence J. West, Chairman

For photostatic copies of articles appearing in the Abstract Section, address the chairman of the Abstracts Committee, Dr. Clarence J. West, National Research Council, 21st and B Streets, Washington, D. C. The charge for this service is 25 cents per page. Copies of United States patents may be obtained from the U. S. Patent Office, Washington, D. C., for 10 cents each. Send currency, not stamps.

Dryer Cylinder Drainage. S. H. Tirrell. World's Paper Trade Rev. 91, 630-634 (Feb. 22), 716-720, 788 (March 1); 822, 824, 866-872 (March 8, 1929).—The system comprises the following features: steam supply pipe, steam control valve, drying cylinder, siphon discharge pipe, thermostatic valve which allows only water to pass to prevent the escape of steam, condensate manifold pipe, filter, air and water receiver pump, water pump, water and air separator, compound vacuum and pressure gauge, dial thermometer, regulator discharge valve, electric motor, relief valve, non-return valves, soft water supply pipe. The system can be easily installed on either new or old machines. Its advantages and performance are briefly discussed.—A.P.-C.

Manufacture of Cigarette Papers. J. Oddon. Paper Trade J. 88, No. 15, 51-56 (April 11, 1929).—A description of the properties, raw materials used, preparation of the raw materials, and manufacturing practice.—A.P.-C.

Elimination of Metallic Particles from Pulp in the Manufacture of Photographic Papers and Others. D. C. M. G. P. Papeterie Special No. 376 (1928).—The process recommended consists in running the pulp on a wet machine to obtain a sheet weighing about 250 to 300 g. per sq. m. and containing about 35 to 40% water, and then subjecting to chlorine gas for about 1 hour. The pulp is then washed and bleached completely (if necessary) with calcium hypochlorite solution. Ordinary calcium hypochlorite bleaching without treatment with chlorine gas does not eliminate the metallic particles.—A.P.-C.

Fireproofing Cellulosic Materials. H. Platt and C. Dreyfus assignors to British Celanese, Ltd. Eng. pat. 296,344, Aug. 29, 1927.—Paper and similar materials are treated with solutions, pastes or other preparations of phosphoric acids, acid phosphates, arsenic acids, or stibnic acids; other fireproofing agents such as aluminum acetate may also be present in the preparations used, which may also contain dyes. Various examples are given in the specifications.—A.P.-C.

Composition of the Commoner Grades of Paper. A. Rettori. Papeterie Special No., 299-355 (1928).—The more usual compositions of a large number of printing, wrapping, tissue, writing, greaseproof, banknote, photographic and specialty papers and cardboards are given.—A.P.-C.

Resistance of Bags to Bursting. H. Micoud. Papier 32, 189-199 (Feb.) 299-300 March 1929).—From a theoretical discussion of the strength of paper bags, the following conclusions are drawn: (1) the bursting strain caused by the pressure on the bottom is only half the strain caused by the pressure on the side walls; (2) bursting will take place along a generator of the cylinder (i.e., vertically) and not along the circumference of the bag; (3) the bursting pressure is proportional to the diameter of the bag; (4) for a given diameter of bag the pressure is proportional to the thickness of the wall (i.e., to the weight of the paper per sq. m.); (5) as the theoretical reasoning indicated that the bag bursts under a strain that tends to separate it into two semi-cylinders, the greater the tensile strength of the paper the higher the bursting strength of the bag. A relatively small number of tests carried out on hand-made bags indicated that, on the whole, these conclusions are sound, making due allowance for the difference in strength of paper in the machine and cross directions and the direction in which it is used for making the bags. The method of making the test consisted essentially in placing a bag of gold beaters' skin inside the paper bag and of approximately the same dimensions as the latter and introducing compressed air, reading the pressure at which the paper bag burst.—A.P.-C.

Baking Pan. Otto Herting assignor to Sani Paper Products Co. U. S. pats. 1,699,843 and 1,699,844, Jan. 22, 1929.—*No. 1,699,843*—A pan suitable for baking pies is formed of wood or vegetable pulp or other suitable fibrous material impregnated with substances such as those which may be formed by the interaction of aluminum sulphate, titanium sulphate, sodium tetraborate and sodium silicate. *No. 1,699,844* specifies similar impregnated utensils, the inner surface of which is coated with paraffin of high melting point and carnauba wax.—A.P.-C.

Waterproofing Paper Articles. M. E. P. Favresse and J. C. Peres. Fr. pat. 629,291, Feb. 18, 1927.—A suspension of flour in water is heated with sodium hydroxide at 120° F, until the starch is completely converted into dextrin. After cooling, a solution of casein and sodium carbonate or silicate is added and the articles to be waterproofed are soaked in this mixture, calendered hot, and treated with a solution of cellulose acetate in acetone and benzyl alcohol.—A.P.-C.

Vulcanized Fiber Product. J. McIntosh assignor to Diamond State Fiber Co. U. S. pat. 1,697,077, Jan. 1, 1929.—Fibrous sheets such as paper are passed through a solution of cellulose acetate or nitrate or other suitable cellulose ester, the solvent is evaporated and dried sheets are superposed on one another to form a product of the desired thickness and are heated under pressure. The product is suitable for gears, radio panels, etc. Synthetic resins, etc., may be added.—A.P.-C.

Recovery of Fibers from Waste Liquors. A. M. R. Karlström. Fr. pat. 640,568, Sept. 6, 1927.—Fibers such as those in waste wood-pulping liquors are recovered by aspirating the liquid mixed with air or gas upwardly into a conical vessel in such a way that the fiber is carried to the top because of the bubbles of air and is there collected, while the liquid is collected at the base —A.P.-C.

Device for Sealing the Ends of Cylinder Molds. H. L. Kutter, assignor to The Black-Clawson Co. U. S. pat. 1,709,026, April 16, 1929.—The ends of the vat are provided with collars adjacent the ends of the cylinder. Suitable scaling means bearing against both the end of the cylinder mold and the collar are provided at each end to prevent passage of the stock, and the sealing material is held in position by separate straps opposite the end of the cylinder and the collar, respectively.—A.P.-C.

Erkensator is New Kind of Screen. Anon. Pulp Paper Mag. Can. 27, 651-652 (May 2, 1929).—A brief illustrated description of the Erkensator, which eliminates both light and heavy impurities from stock by means of centrifugal force.—A.P.-C.

Treatment of White Water by Decantation. Anon. Papeterie Special No. 363-367 (1928).—A brief discussion of the conditions which must be fulfilled by decantation save-alls and of the merits of the Denoël save-all.—A.P.-C.

Devain's Straw Pulp Mill in Chile. Anon. Wochenbl. Papier-Fabr. 60, 264-7 (1929).—A general description.—R.H.D.

Section of the

COST DEPARTMENT

of the

American Paper and Pulp Association

Edited by T. J. Burke C. A. Director Cost Dept.

Distribution Cost Analysis–Methods *

By Howard C. Greer[1]

The present-day importance of the distribution problem can hardly be overestimated. The most intensive scientific study, the most active public discussion are centered on this feature of our industrial and commercial activity. Business men have come to realize in recent years that many of the gains accomplished through efficient and economical production have been lost through costly and wasteful distribution. The interests of industry and commerce, as well as those of the public, demand more effective and less expensive distribution means and methods.

It is not surprising, therefore, that much attention is being given by cost accountants to the development of a technique for determining distribution costs accurately and presenting them intelligibly. Just as cost accountants rendered invaluable service to manufacturing departments in the era when great advances were being made in production and administration, so today cost accountants are coming forward with invaluable aid to sales managers, market analysts, distribution engineers, and all others engaged in the work of marketing the products of manufacturing enterprises. The techniques necessary for sound distribution accounting work are still new, experimental, and unfamiliar to many, but they are being rapidly developed and will occupy a place of increasing importance for many years to come.

More Important Features of the Work

The purpose of this paper is not to cover the field in comprehensive fashion or even to discuss fully the fundamental principles and objectives of distribution cost accounting, but rather to touch on some of the more important features of the work, and to indicate by specific illustrations how the problem has been attacked in several different fields. The material may be considered as intended to supplement and emphasize that contained in numerous discussions of the problem which have already been widely circulated and are doubtless familiar to you. I shall try to point out a few somewhat striking features of distribution cost accounting work and to indicate how certain methods have been applied in specific cases and what results have been obtained in these cases.

Since many of you doubtless habitually think in terms of the cost accounting methods of the manufacturing enterprise, it may be appropriate to introduce these comments and illustrations by a brief comparison of certain features of the two techniques. Cost accounting for distribution activities is like cost accounting for production activities in some respects, but quite unlike it in certain others. An appreciation of the points of similarity and difference should be helpful in an understanding of the opportunities and methods open to cost accountants in the distribution field.

Probably the first distinguishing characteristic to be noted is the fact that manufacturing cost accounting is done almost exclusively in terms of products, while distribution cost accounting may relate not only to the products but to other classifications into which business activity may be divided. For example, distribution costs may be determined by territories in which product is sold, by methods of sale, by terms of sale, by methods of delivery, by classes of customers, by size of customers, by size of orders, and by many other possible sub-divisions. In distribution cost accounting then, we are likely to look at the problem from many different angles, whereas in production cost accounting we confine ourselves largely to the single viewpoint of product cost determination.

A Guide to the Manufacturer

This fundamental difference of approach suggests the great value of distribution cost accounting to an enterprise. Cost accounting is intended to serve as a guide to the manufacturer or merchant in his selection among several possible business policies. In manufacturing, the manager often has, in point of fact, very little alternative as to products made or methods of making them, and there is a corresponding limitation on the value of cost accounting data to him. In distribution, however, almost every enterprise has a number of different choices constantly open. The discovery that one method is expensive or unproductive leads promptly to consideration of several possible alternative methods. Many concerns have already altered their distribution methods in accordance with findings reached through cost analysis in this field. Many more will doubtless do likewise in the future.

A second distinguishing characteristic is found in the method of cost allocation. The traditional production cost accounting technique involves the separation of charges as between direct and indirect, and the apportionment of the latter over various jobs or products on some basis usually connected with the former—such as quantity or value of labor or material, machine operating hours, etc. In distribution cost accounting there is likely to be a lesser proportion of total charges which are strictly "direct" costs (as we use the term in the factory), but, on the other hand, there are also likely to be many more useful bases for apportioning non-direct charges to the commodities, territories, customers, etc., which may be the subject of study.

This leads to the use in the distribution field of a valuable cost accounting device which has been developed only very gradually and incompletely in the production field. I have reference to what might be called the "factor of variability"—the functional unit to which changes in the amount of different

* N. A. C. A. Bulletin.
[1] Inst. of American Meat Packers, Chicago, Ill.

types of costs and expenses is related. There are many such factors in every business. Their determination and measurement are important and useful to the cost accountant. The bases used for allocating manufacturing burden are usually in the nature of factors of variability, although roughly and often inaccurately expressed. Many such factors are easily and accurately determinable in the distribution cost field.

By Way of Illustration

By way of illustration of what I mean, let me quote to you one of the first instances of the use of these factors which came to my attention, a good many years ago. A certain street railway company divided all of its operating expenses according to the applicable factors of variability. A group total was determined under each factor and the unit factoral cost was used in estimating the effect on total costs of various possible operating policies.

One factor, for example, was the number of car miles operated; costs of power, car maintenance, and other similar items varied with this factor. Another factor was the number of revenue passengers carried; costs of tokens, tickets, and transfers varied with this factor. Another was car hours; wages of platform men varied with this factor. Another was the number of miles of track operated; costs of maintenance of right of way, power lines, etc., were believed to vary with this factor. It will be readily seen how promptly and satisfactorily the cost of operating any given division of the system could be computed; also how easily we could estimate the effect on costs which would result from increasing or reducing the number of miles of track operated, the number of car miles or car hours operated, the number of revenue passengers carried, etc.

The third important element of comparison involves similarity rather than a distinction between production and distribution cost accounting. In both fields, attention of the cost accountant should be concentrated first on the function performed in each section and subdivision of the business. We have been working around gradually to a functional analysis of cost in the factory. We have made very little progress as yet in most concerns toward a functional analysis of distribution activities. We must know costs by functions and factors if we are to make accurate and useful cost allocations.

The work of the cost accountant along this line is commonly hampered by the disposition of the bookkeeper to classify his expenses in the simplest and most obvious way—namely, according to "object of expenditure." Salaries are simply salaries to the bookkeeper, supplies are supplies, and maintenance is maintenance. It is much more difficult to effect a bookkeeping classification which involves a combination of the salaries, supplies, and maintenance incident to operating the shipping department, and combining in another group the same items incident to the operation of the credit department. Yet these are separate functions and their costs must be known individually.

Marketing the Product

One of the first tasks of the cost accountant in the distribution field is to obtain a clear picture of what functions are being performed in marketing the product. When he has established what these functions are, he must provide the necessary accounting classifications to break down expenses into the proper functional divisions. He must not be confused by the inherent disposition to group a large number of unrelated activities under the general heading of "administrative" and to assume that these costs cannot be allocated except on some arbitrary basis. In the completely developed accounting system, there should be no left-over items to be dealt with arbitrarily. Each cost is connected with some function, and it is the cost accountant's responsibility to determine what that function is and how much per factoral unit it costs to perform it.

In the light of the above comments, we may perhaps conclude that distribution cost analysis involves a number of successive steps to be taken in substantially the following order:

1—Determination of what is to be costed—that is, whether we are interested in a cost analysis by products, by territories, by class of customers, or on some other basis.

2—Analysis of all distribution expense according to functions performed.

3—Determination of the functional factor of variability—that is, the unit of measurement of functional service according to which costs may be expected to vary.

4—Development of a unit cost for each such functional factor determined.

5—Measurement of the number of functional units required in the distribution of the product for the territory, etc.

6—Application of the cost to products, territories, or whatever, in accordance with the information gained through the above procedure.

The steps outlined above will be seen to carry us only through the stage of historical cost determination. On completion of this analysis, there will remain before us, of course, the important task of developing standards for these costs and the further task of making these standards effective. That the present discussion is confined to the technique of cost determination should not suggest that the technique is to be considered as anything other than a preliminary to the essential task of making the information useful to the company in the establishment of policies and the exercise of control over operations.

A Few Specific Illustrations

With this rather sketchy background of general principle established, let us turn now to a few specific illustrations of cost analysis in the terms outlined. These illustrations are contained in four brief tables to which I shall ask your attention one by one. All of them are drawn from the wholesale field. Since many of you are representatives of manufacturing concerns, I should have preferred to use illustrations closer to your own business, but I assume that you are already familiar with the best of the published material in this field, because it appears in the bulletins issued from time to time by the National Association of Cost Accountants. There have been particularly fine discussions by Mr. Freeman of the Dennison Manufacturing Company, Mr. Lovell of the Norton Company, Mr. Barrett of the Kellogg Company, and Mr. Frost of the Wahl Company. All of these will repay the most careful reading by anyone interested in the subject.

The first illustration I have to present to you (shown in Table 1) is a distribution cost analysis by territories and by classes of trade. The figures were obtained from a study of the accounts of a meat packing company of moderate size, located in one of the large cities of the country. It is not suggested that these figures are representative of the results obtained by meat packers in general; the tabulation may be considered as merely illustrative of the method of analysis followed and the type of results which may be obtained by such analysis.

TABLE 1

ANALYSIS OF DISTRIBUTION EXPENSES BY TERRITORIES
Method of Allocating Costs

Expense Classification	Amount	Factor for Expense Allocation
Salesmen's Salaries	$2,800	Actual by routes.
Salesmen's Expenses	2,000	Actual by routes.
Packing, Loading & Shipping Expense	1,600	Cost per cwt. sold, developed by time study for each sales territory.
Boxes, Barrels, etc.	600	Cost per cwt. sold, developed by box cost analysis on each territory.
Garage & Truck Expense	1,700	Cost per truck hour times no. hours on each route.
Drivers' Salaries	800	Cost per driver hour, on each route.
Freight & Drayage	1,400	Actual by routes.
Sales Supervision	1,100	All routes bear equal shares.
Credit Department	600	Cost per customer times no. customers.
Traffic Department	300	Cost per freight shipment times no. shipments.
Accounting Department (expense broken down by functions)	1,800	Cost per item billed, per invoice rendered, per statement mailed, etc., times appropriate factors.

Results by Classes of Territory in Dollars per Cwt. Sold

Classes of Sales	Margin	Expense	Profit
All Combined	$2.64	$2.46	$ .18
City Jobber	3.97	3.74	.23
City Retailer	2.80	2.47	.33
Country Motor	2.45	2.00	.45
Country Freight (Salesmen)	2.88	3.83	.95*
Country Freight (Agents)	2.46	3.47	1.01*
Car Lot and Misc.	1.60	.72	.88

Results by Routes in Country Motor Territory

Route No. 1	$2.06	$2.00	$ .06
Route No. 2	2.94	1.76	1.18
Route No. 3	3.10	2.16	.94
Route No. 4	2.36	2.30	.06
Route No. 5	2.32	2.12	.20
Route No. 6	1.63	2.02	.39*
Route No. 7	1.76	2.18	.42*
Route No. 8	2.20	2.06	.14

* Loss. (Figures from a bulletin of the Institute of American Meat Packers, by Howard C. Greer.)

This meat packer distributes his goods to six classes of trade, designated respectively as (1) city jobber, (2) city retailer, (3) country motor, (4) country freight-salesmen, (5) country freight-agents, (6) car lot and miscellaneous. Up to the time of our analysis he had never attempted to determine distribution costs according to these classes of trade. The general assumption of the company was that while some classes of trade cost more to sell than others, proportionately higher gross margins were obtained on these classes of business.

Expense According to Functions

Our first step was to break down the distribution expense according to functions, as indicated in the upper half of Table 1. The amounts represent the approximate expenditures for one month, but they are of no great importance in the illustration. It may be noted that it was necessary in this analysis to regroup the items appearing on the books of the company, which were not laid out to show expense totals according to functions. It was also necessary to include certain items (such as accounting, traffic, and credit department expense) which the company showed as part of its administrative rather than its selling expenses.

The second step in the procedure was to determine the proper units of functional service to be used in allocating the costs. These are indicated in the upper right hand section of the table. I need not stop to indicate why each particular unit was selected; most of them obviously justify themselves, and in the other cases there was invariably some compelling reason for the choice of the unit used.

The significant fact is that we were able to allocate almost every item of expense on some basis bearing a reasonable relation to the actual service rendered. You will note that the item of "sales supervision" alone is distributed on anything approaching an arbitrary basis. This expense makes up less than 10 per cent of the total outlay. Over 90 per cent of the expenses, then, were distributed according to some definite service factor.

A high percentage of directly charged expenses is essential if the results are to have meaning. As soon as we are forced to resort to arbitrary apportionments for any considerable share of the total expense, we get on to very dangerous ground. The success of the job depends, in my opinion, on the extent to which actual factors of variability can be utilized in distributing the charges.

Results Shown by Analysis

Let us glance for just a moment at the results shown by the analysis in this particular company (lower half of Table 1). Note that while average expense per hundredweight of product sold was $2.46 for all classes of territory, it runs from $3.50 to $4.00 in the city jobber and country freight territories. In the first named, the gross margin realized is sufficient to cover the expense and leave a small profit. But in the two freight classifications the gross margin falls short by almost $1.00 per hundredweight of equaling the expense incurred. These two territories, then, are an obvious drag on the business, and are responsible for the meager profit showing of all territories combined.

Note also the results indicated by the car lot business. Because of the low margins obtained, the company had always considered this class of trade to be unprofitable. Careful expense allocation proved that, contrary to this opinion, it is the most profitable type of business handled by the company.

Realizing that, just as all classes of trade are not alike, neither are subdivisions within a given class of trade necessarily similar in their showing, we decided to make a further analysis by routes in the country motor territory. The result is shown in the lower portion of Table 1. Here again there are astonishing variations between the results of the different subdivisions. Route 2 and 3 have high margins and low expenses and contribute very substantial profits. Routes 6 and 7 have low margins and high expenses and contribute losses. In point of fact, we found when the profits were allocated properly that route 2 alone produced more profit than the entire eight country motor routes taken together. In other words, the losses on routes 6 and 7 more than offset the profits realized on routes 1, 3, 4, 5, and 8.

Let me say again that these figures are illustrative rather than representative. About the only thing certain is that any concern making an analysis of this type for the first time will find some astonishing situations in the various territories, sub-territories, and classes of trade.

Analysis of Expenses by Customers

The second illustration which I have to offer (shown in Table 2) involves an analysis of expenses by customers according to the size of their orders and accounts. Another meat packing company was the subject of this study, the business analyzed being that secured from five so-called "car-routes"—that is, territories covered by a refrigerator car making numerous stops for partial unloading, orders having been previously taken by the route salesmen. As in the previous illustration, the upper half of the table indicates the functional analysis of expense, the factor according to which expenses were allocated, and (as an additional item this time) the expense per functional unit.

TABLE 2

ANALYSIS OF DISTRIBUTION EXPENSE BY CUSTOMERS ACCORDING TO ORDER AND ACCOUNT SIZE

Method of Allocating Costs

Function	Factor for Expense Allocation	Expense per Unit
Order taking		
Personal Calls	No. of personal calls	97.5 cents per call
Phone Solicitation	No. of phone calls	23.8 cents per call
Packing & Shipping		
Boxes & Packing	Actual according to cost of box used	
Loading in Cars	Cwt. loaded	4.3 cents per cwt.
Delivery		
Freight	Actual by orders	
Drayage	Actual by orders	
Sales Bookkeeping		
Billing & Analysis	No. of items	3.0 cents per item
Posting, etc.	No. of sales invoices	12.0 cents per invoice
Credits & Collections		
Personal Calls	No. of calls	10.8 cents per call
Statements & Office	No. of customers' accts.	17.7 cents per account
Bad Debts	Per cent of sales (on sliding scale)	From 2% to 0.1%
General Overhead	No. of cwt. sold	8.7 cents per cwt.

Costs by Orders According to Size

Size of Order	Total Cost	Cost per Pound
Less than 25 pounds	$2.11	$ .14
25 to 50 pounds	2.31	.06
50 to 100 pounds	2.72	.03¼
100 to 200 pounds	3.51	.02½
200 to 500 pounds	5.41	.01½
500 to 1000 pounds	7.31	.01¼

Results per $100 of Sales by Accounts According to Size

Size of Account (Monthly Purchases)	Margin	Expense	Profit
Less than $25	$10.91	$43.36	$32.45*
$ 25 to $ 50	10.70	21.14	10.44*
$ 50 to $ 100	9.85	14.02	4.17*
$100 to $ 200	10.40	10.21	.19
$200 to $ 500	9.87	7.85	2.02
$500 to $1000	8.15	6.04	2.11
More than $1000	9.20	6.13	3.07
All Combined	9.64	8.76	.88

* Loss. (Figures from a bulletin of the Institute of American Meat Packers, by Howard C. Greer.)

Each order handled by the car routes under review was costed separately. It was therefore necessary to determine the number of units of functional service connected with each order and each account. A few items like freight and drayage were allocated directly to individual orders; almost all of the other items could be allocated on the basis of some definite factor. Some study was required to work out the factors in certain cases; rough time studies, for example, were necessary to find the cost of packing boxes of various sizes and types, of loading product into cars, etc. It should be noted that in this study also there was very little expense (only about 15 per cent of the total) left for distribution on an arbitrary basis. General overhead items not assignable to any specific function were applied at so much per hundredweight of product.

Illustrations of the Results Obtained

The lower half of the table is again an illustration of the results obtained. The disproportionate cost of handling small orders and small accounts is particularly striking. As against an average cost of distribution (for the entire five routes) of something under two cents per pound, orders of less than 25 pounds were found to cost 14 cents per pound to distribute. Even orders between 25 and 50 pounds cost over three times the average—and there were a great many such orders.

The cost of handling each customer's account was also calculated and some widely varying costs were discovered. Customers whose purchases amounted to less than $25.00 per month were responsible for selling expenses approximately five times the average. While the gross margin per $100 of sales realized from these small customers was approximately $1.27 above the average, the expense of serving them was $34.60 above the average. When consideration is given to the effect of the narrow average margins realized by this and most meat packing companies, it is perfectly obvious that accounts of this class can yield no profit. The lower portion of the table shows that accounts of less than $100 per month produce substantial losses to the business, operating so as almost to wipe out the moderate profits secured from a business of larger customers.

The third illustration indicates the method which may be followed in analyzing distribution expense according to products

TABLE 3
ANALYSIS OF DISTRIBUTION EXPENSES BY COMMODITIES
Method of Allocating Costs

Function	Factor for Expense Allocation	Expense per Unit
Handling (receiving & shipping labor, supplies, use of equipment, etc.)	Weight volume handled..	11⅔ cents per cwt.
Storing (rent and maintenance of buildings and fixtures)	Bulk of goods stored...	15 cents per cu. ft.
Finance (taxes, insurance and interest on investment)	Value of goods stored...	$6.25 per $100 of inventory
Delivery (truck and garage expense, drivers' wages, etc.)	Weight volume delivered.	8⅓ cents per cwt.
Office (clerical labor, supplies, postage, telephone, etc.)	No. of items.....	9⅓ cents per item
Selling and Administration (sales salaries and expense, executive supervision, etc.)	Dollar volume of sales...	4.5 per cent of sales.

Illustration of Costing by Commodities

Factors per $100 of Sales	Avg. Commod.	Tobacco	Sugar	Canned Fruit
Weight in lbs.	1,200	50	1,667	1,042
Bulk in cu. ft.	4.0	0.2	1.0	18.0
Invty. value in dollars ..	$16.00	$8.56	$3.44	$68.57
No. items	16.1	10.0	8.3	25.1
Expense per $100 of Sales				
Handling	$1.40	$.06	$1.95	$1.22
Storing	.60	.03	.15	2.70
Financing	1.00	.54	.22	4.29
Delivery	1.00	.05	1.39	.87
Office	1.50	.93	.77	2.33
Selling and administration	4.50	4.50	4.50	4.50
Total	$10.00	$6.11	$8.98	$15.91

(Figures adapted from "The Wholesale Grocers' Problems"—By J. W. Millard, U. S. Dept. of Commerce.)

TABLE 4
ANALYSIS OF DISTRIBUTION EXPENSE BY TYPES OF ORDER
Method of Allocating Costs

Buying, receiving, storing, shipping and general ..... per $100 of sales
Selling, delivery, billing, etc. ..... per item
Handling (breaking bulk) ..... per unit of sale (none on full cases)

Illustrations of Costs and Profits for Various Units of Sale
(i. e. Orders of Various Sizes)

Function	Full Case.	One Doz.	½ Doz.	1/6 Doz.	1/12 Doz.
Buying, receiving, storing & shipping	3.24%	3.24%	3.24%	3.24%	3.24%
Handling (breaking bulk)	...	2.48	4.96	14.88	29.76
Selling	.71	2.14	4.28	12.84	25.68
Delivery (city)	.14	.42	.84	2.52	5.04
Pricing, billing, etc.	.21	.62	1.24	3.72	7.44
Executive and general	3.63	3.63	3.63	3.63	3.63
	7.93	12.53	18.19	40.83	74.79
For an article selling at $2.00 per dozen with gross margin of 20%, result on each transaction would be as follows:					
Margin	1.20	.40	.20	.07	.03
Expense	.48	.25	.18	.14	.12
Profit or * Loss	.72	.15	.02	.07*	.09*

(Figures adapted from a bulletin of the National Wholesale Druggists' Association, as quoted in "Domestic Commerce.")

or commodities sold. The figures in this illustration (shown in Table 3) have been taken from a bulletin of the U. S. Department of Commerce and relate to the operations of a wholesale grocery company. The functional expense analysis, the factor of variability, and the unit functional expense are again shown in the upper half of the table. It should be noted that the grouping of expenses is somewhat different from the one indicated in the earlier illustrations, owing to the different type of costing required when commodities instead of territories or customers are the basis of study.

Results in Three Typical Commodities

The lower portion of Table 3 indicates the results found by applying the unit cost determined to three typical commodities. Note particularly the variations from the average in functional service requirements of the three commodities selected.

One hundred dollars' worth of sugar, for example, represents over thirty times as much weight and five times as much bulk as one hundred dollars' worth of tobacco, yet because of the more rapid turnover it involves a dollar inventory investment only half as much. The higher cost of distributing canned fruit as compared with such commodities as tobacco and sugar may be anticipated when its functional service requirements are examined. One hundred dollars' worth of this commodity represents less than the average weight in pounds, but four and one-half times the average bulk and over four times the average dollar inventory value. It requires, moreover, twenty-five items of canned fruit to make up one hundred dollars' worth of sales, against an average of sixteen items for all commodities and only eight or ten items on such commodities as sugar and tobacco.

The totals at the foot of the table give the comparative cost of distributing these three commodities, and also the average commodity handled by this wholesaler. The tobacco distributing cost is only a little over one-half the average; sugar falls just slightly below the average, while canned fruit is nearly 60 per cent above the average. This information is obviously of inestimable value to wholesale grocers attempting to set gross profit margins intelligently on the various commodities handled.

It seems to me that there is only one weakness in this analysis, namely, that too large a portion of the total expense is distributed on a somewhat arbitrary basis. The expense of sales salaries and salesmen's travel, executive supervision, advertising, etc., amounts to nearly half the total cost, and it is apportioned simply on the basis of the number of dollars of sales. It is very difficult—if not impossible—to arrive at any better basis for making this distribution when costing by commodities is at-

tempted. The papers prepared by Mr. Freeman and Mr. Barrett (previously referred to in this talk) attack this subject vigorously, and represent what seems to me the best discussion of the possibilities in this connection which I have seen so far. In the case of a wholesaler handling a general line the problem is, however, almost, if not entirely, insoluble. I point out the difficulty in this connection not by way of criticism of Mr. Millard's analysis, but rather to indicate the inherent difficulty of the problem.

One Particular Problem

The fourth and final illustration is included here (Table 4), not because it indicates a method differing particularly from those already explained, but because it brings out in a striking manner one particular problem which confronts all wholesalers and many manufacturers. The material presented comes from a study made by the National Wholesale Druggists' Association, and has been prepared to indicate the enormous burden carried by a wholesaler who attempts to sell goods in broken packages at no advance over the quoted price for full case lots.

The functional analysis of expenses is very simple, the most important element being the special treatment given to "commodity handling" in the warehouse, which consists entirely of the cost of breaking bulk and separately packing the numerous small lots, so familiar to every wholesaler. In the lower half of the table, the expenses are all stated in the percentage of the sale price. Many items are (for convenience and economy of effort) treated as proportionate to sales. Selling, pricing, billing and delivering are recognized as being practically the same for each item sold, while special recognition is given to the cost of breaking bulk as above noted.

It will be observed that the expense of distribution rises from 8 per cent of sales on a full case order to 75 per cent of sales on an order for a single item (1/12 of a dozen or 1/36 of a full case). If it be assumed that the same price per item is charged throughout, with a resulting uniform gross margin, the results of a transaction vary all the way from a substantial profit on full case business down to definite losses on orders for less than one-half dozen. The same general situation may be found to exist in practically every wholesaling business, presenting perhaps the most serious single problem with which this class of merchant has to contend at the present time.

Illustrative Material

There is a great and increasing amount of illustrative material along these lines now being published from many sources. The National Association of Cost Accountants, the American Management Association, and the United States Department of Commerce have all taken an active part in analyzing the problem in many fields. Numerous trade associations are studying the subject, and have published many exceedingly interesting bulletins on their findings. Individual companies are now giving serious thought to problems presented and are also contributing to the growing literature on the subject, from which I have merely selected a few informative samples.

By way of conclusion, let me point out once more that the task of the cost accountant does not stop when a determination of distribution costs has been made. In fact, if he has a proper conception of his job, he realizes that his work has only begun when he reaches that point. A world of analyses are of no value unless they are put into practical use by the managing executives of the concern. While the cost accountant himself in many instances cannot properly be termed a managing executive, he does, it seems to me, have at least three very definite responsibilities in connection with work of this type.

First, he should take the lead in suggesting to the management what sort of analyses are required, and, when approval has been obtained, should direct the making of these analyses and the presentation of the results in intelligible form to the management.

Second, he should co-operate with the executives who direct the distribution activities of the company in the development of standards of distribution expense, as well as standards of volume and gross margins generally.

Third, he should make himself responsible for controlling actual results, through application of the standards and through prompt and informative comparisons of estimated and actual results for each period.

In the satisfactory accomplishment of these tasks as related to the field of distribution, cost accountants can render to industry and commerce one of the services of which it stands most in need at the present time.

To Start Insulating Plant in Ohio

"The first step toward bringing a new industry to Ada," says a press dispatch, "was taken this week when business and professional men of that town heard an explanation of the new process for making insulating board out of corn stalks, and a definite proposal for the formation of a company to manufacture corn board there.

"The process and plans were laid before the men at the request of the Kiwanis industrial committee by James J. Hinde, of Sandusky, one of the developers of the Hinde & Dauch Company. Mr. Hinde sold his interest in that company about six years ago, but has since been experimenting with corn stalks so successfully that he now holds 14 patents on corn board products and is ready to begin production.

"Having satisfied himself that corn board can be marketed successfully and sold for insulating and dozens of different purposes, Mr. Hinde says he is now ready to form a company and start manufacture of the product. He has already produced the corn board in ton lots and has the assurance of big consumers that it will be in demand. He is getting inquiries from many towns in the corn belt interested in obtaining such an industry.

"Ada is favorably located for a corn board plant, and farmers in this vicinity would be willing to sell their corn stalks for $8 a ton, he believes. The plant he has in mind would employ about 50 men and would make about 100,000 square feet of corn board a day, using in the course of a year the stalks from 5,000 acres.

"Should the parent plant be located here, Mr. Hinde says he would manage it personally and would undertake to expand the business rapidly during the next two or three years, making many different products, all from raw material available from farms in this vicinity.

"The machinery and installation would cost about $65,000, he estimates, and the factory building about $25,000. An additional $60,000 should be available for working capital to see the business through its initial stages."

Japanese Paper Production Lower

[FROM OUR REGULAR CORRESPONDENT]

WASHINGTON, D. C., August 4, 1930.—The Japanese Paper Manufacturers' Association reports production by member mills during the month of April at 58,410 short tons, thus bringing the total for the first four months of this year up to 227,303 tons as against 234,661 tons during the corresponding period of last year. Sales during this period declined from 230,144 tons to 225,107 tons. Raw materials consumed by the mills during April comprised 5,062,910 cubic feet of pulpwood; 4507 tons of rags; straw, and other waste, 26,473 tons of chemical pulp and 16,983 tons of mechanical pulp.

Japan's imports of wood pulp during the first four months of this year have fallen under those of the corresponding four months of last year by 7,742 pounds or 21 per cent. Of the total receipts amounting to 29,116 short tons during this year 18,602 tons were shipped from Canada, while Norway, Sweden and the United States, which shipped between 2,000 and 3,000 tons each, supplied most of the remainder.

COST SECTION

IMPORTS OF PAPER AND PAPER STOCK

NEW YORK, BOSTON, PHILADELPHIA AND OTHER PORTS

NEW YORK IMPORTS

WEEK ENDING AUGUST 2, 1930

SUMMARY

Cigarette paper .....2319 cs.
Wall paper .....4 pkgs., 13 blds., 28 cs.
Paper hangings .....5 bls., 24 cs.
Hanging stock .....201 rolls
Veneer paper .....2 cs.
News print .....36 bls., 350 rolls
Packing paper .....9 cs.
Wrapping paper .....12 cs.
Kraft paper .....40 bls.
Printing paper .....72 rolls, 115 cs.
Drawing paper .....59 cs.
Filter paper .....12 cs.
Baryta coated paper .....80 cs.
Gold coated paper .....7 cs.
Metal coated paper .....15 cs.
Surface coated paper .....58 cs.
Photo paper .....4 cs.
Colored paper .....25 cs.
Decalacomania paper .....20 cs.
Writing paper .....7 cs.
Note paper .....5 cs.
Envelopes .....71 cs.
Stencil paper .....3 cs.
Transparent greaseproof paper .....4 cs.
Caoutchouc paper .....6 cs.
Cardboard .....55 pkgs.
Miscellaneous paper .....5 bls., 353 cs.

CIGARETTE PAPER

American Tobacco Co., Roussillon, Bordeaux, 400 cs.
H. H. Strauss, Pipestone Co., Havre, 40 cs.
F. Murray Hill, Olympic, Southampton, 7 cs.
H. H. Strauss, MacKeesport, Havre, 183 cs.
De Manduit Paper Corp., MacKeesport, Havre, 312 cs.
De Manduit Paper Corp., West Pocasset, St. Nazaire, 1077 cs.
American Tobacco Co., West Pocasset, Bordeaux, 300 cs.

WALL PAPER

G. J. Hunken, Dresden, Bremen, 4 bls.
F. J. Emmerich, New York, Hamburg, 2 bls.
Irving Trust Co., New York, Hamburg, 3 cs.
R. Graves Co., New York, Hamburg, 2 cs.
J. E. Bernard & Co., Pennland, Antwerp, 4 pkgs.
W. H. S. Lloyd & Co., Minnewaska, London, 7 bls., 2 cs.
F. J. Emmerich, Cedric, Liverpool, 6 cs.
International F'd'g Co., Argun Maru, Yokohama, 4 cs.
R. F. Downing & Co., Argun Maru, Yokohama, 7 cs.
Thomas & Pierson, Olympic, Southampton, 2 cs.
Kensington Wallpaper Co., Leviathan, Southampton, 2 cs.

PAPER HANGINGS

A. C. Dodman, Jr., Inc., Cedric, Liverpool, 22 cs.
Whiting & Patterson Co., Inc., Olympic, Southampton, 5 bls., 2 cs.

HANGING STOCK

F. & R. Trading Corp., Pr. Harding, Hamburg, 201 rolls.

VENEER PAPER

International F'd'g Co., Argun Maru, Yokohama, 2 cs.

NEWS PRINT

Walker, Goulard, Plehn Co., Dresden, Bremen, 35 bls.
——, Dresden, Bremen, 288 rolls.
——, Stavengerfjord, Oslo, 62 rolls.

PACKING PAPER

F. L. Kramer & Co., Dresden, Bremen, 6 cs.
Hensel, Bruckman & Lorbacher, Volendam, Rotterdam, 3 cs.

WRAPPING PAPER

Yardley & Co., Caronia, London, 12 cs.

KRAFT PAPER

——, Stavangerfjord, Oslo, 40 bls.

PRINTING PAPER

J. Henschel & Co., New York, Hamburg, 15 cs.
Japan Paper Co., American Trader, London, 2 cs.
C. Steiner, Volendam, Rotterdam, 6 cs.
E. Dietzgen & Co., Volendam, Rotterdam, 36 cs.
Japan Paper Co., Ile de France, Havre, 2 cs.
Keller, Dorian Paper Co., Ile de France, Havre, 1 cs
International F'd'g Co., E. Francqui, Antwerp, 5 cs.
Keuffel & Esser Co., Pr. Harding, Hamburg, 72 rolls.
Japan Paper Co., Vulcania, Trieste, 39 cs.
T. N. Fairbanks, Vulcania, Trieste, 9 cs.

DRAWING PAPER

Artists Brush & Color Co., Minnewaska, London, 1 cs.
Keuffel & Esser Co., Pr. Harding, Hamburg, 58 cs.

FILTER PAPER

H. Reeve Angel & Co., Inc., Minnewaska, London, 2 cs.
Schenckers, Inc., Roussillon, Bordeaux, 10 cs.

TISSUE PAPER

F. C. Strype, Franconia, Liverpool, 2 cs.
R. F. Fisher & Bro., Franconia, Liverpool, 15 cs.

BARYTA COATED PAPER

Globe Shipping Co., Dresden, Bremen, 80 cs.

GOLD COATED PAPER

F. Murray Hill, Dresden, Bremen, 7 cs.

METAL COATED PAPER

Hensel, Bruckman & Lorbacher, New York, Hamburg, 14 cs.
F C. Gerlach, New York, Hamburg, 1 cs.

SURFACE COATED PAPER

Gevaert Co. of America, Pennland, Hamburg, 58 cs.

PHOTO PAPER

J. J. Gavin, Olympic, Southampton, 4 cs.

COLORED PAPER

S Gilbert, Dresden, Bremen, 17 cs.
F. L. Kramer, Dresden, Bremen, 8 cs.

DECALCOMANIA PAPER

C. W. Sellers, New York, Hamburg, 7 cs.
C. W. Sellers, Bremen, Bremen, 10 cs.
L. A. Consmiller, Bremen, Bremen, 3 cs.

WRITING PAPER

B. Altman & Co., Ile de France, Havre, 2 cs.
American Express Co., MacKeesport, Havre, 5 cs.

NOTE PAPER

Marshall Field & Co., Ile de France, Havre, 5 cs.

ENVELOPES

Globe Shipping Co., Dresden, Bremen, 71 cs.

STENCIL PAPER

International F'd'g Co., New York, Hamburg, 3 cs.

TRANSPARENT GREASEPROOF PAPER

Central Hanover Bank & Trust Co., New York, Hamburg, 4 cs.

CAOUTCHOUC PAPER

American Express Co., New York, Hamburg, 6 cs.

CARD BOARD

Irving & Goldberg Inc., Volendam, Rotterdam, 55 pkgs.

MISCELLANEOUS PAPER

Old Master Paper & Pulp Co., New York, Hamburg, 5 bls.
J. J. Shore, New York, Hamburg, 3 cs.
W. A. Foster & Co., Saco, Rotterdam, 5 cs.
Steiner Paper Corp., Volendam, Rotterdam, 49 cs.
Whitfield Paper Works, Asuka Maru, Kobe, 29 cs.
F. C. Strype, Asuka Maru, Yokohama, 10 cs.
H. C. Davison, Asuka Maru, Yokohama, 3 cs.
F. C Strype, Argun Maru, Yokohama, 6 cs.
T. N. Fairbanks, Olympic, Southampton, 3 cs.
Standard Products Corp., Ile de France, Havre, 146 cs.
W. H. S. Lloyd & Co., Ile de France, Havre, 1 ble.
Globe Shipping Co., Ile de France, Havre, 18 cs.
American Express Co., Ile de France, Havre, 75 cs.
Keller Dorian Paper Co., Leviathan, Southampton, 6 cs.

RAGS, BAGGINGS, ETC.

J. Cohen & Son, Franconia, Liverpool, 86 bls. paper stock.
Darmstadt, Scott & Courtney, Exminster, Genoa, 59 bls. rags.
Banco Com'l Italiane Trust Co., Exminster, Genoa, 102 bls. bagging.
——, Dresden, Bremen, 87 bls. rags.
G. Schuster, Sud Atlantico, Havana, 20 bls. rags.
Darmstadt, Scott & Courtney, Volendam, Rotterdam, 6 bls. rags.
E. J. Keller Co., Inc., Volendam, ——, 57 bls. rags.
E. J. Keller Co., Inc., Ambridge, ——, 61 bls. rags.
Bank of Montreal, Asuka Maru, Kobe, 25 bls. rags.
Brown Bros. & Co., Cold Harbor, Manchester, 52 bls. rags.
National City Bank, Argun Maru, Osaka, 30 bls. rags.
V. Galaup, Pipestone County, Dunkirk, 10 bls. rags.
C. B. Richard & Co., Pipestone County, Havre, 53 bls. rags.
Castle & Overton, Inc., Pipestone County, Havre, 90 bls bagging.
E. Butterworth & Co., Inc., Pipestone County, Havre, 77 bls. bagging.
V. Galaup, Pipestone County, Havre, 95 bls. bagging; 63 bls. rags.
D. M. Hicks, Inc., Pipestone County, Havre, 54 bls. rags.
——, Pipestone County, Havre, 21 bls. new cuttings
E. J Keller Co., Inc., Pipestone County, ——, 39 bls. new cuttings.
——, E. Francqui, Antwerp, 125 bls. bagging.
E. Butterworth & Co., Inc., MacKeesport, Dunkirk, 40 bls. flax waste.
E. J. Keller Co., Inc., West Pocasset, ——, 106 bls. rags.
E. Buterworth & Co., Inc., Cabo Mayor, Naples, 117 bls. rags.
E. Butterworth & Co., Inc., Cabo Mayor, Genoa, 251 bls. bagging.
Irving Trust Co., New York, Hamburg, 76 bls. cotton nappers.

OLD ROPE

Irving Trust Co., Iresden, Bremen, 143 coils.
Brown Bros. & Co., Pennland, Antwerp, 49 coils.
International Purchasing Co., Exminster, Genoa, 159 coils.
S. Birkenstein & Son, Pr. Harding, Hamburg, 31 coils
Brown Bros. & Co., Cabo Mayor, Huelva, 370 coils.
Irving Trust Co., Cabo Mayor, Pasajes, 183 coils.

CHINA CLAY

L. A. Salomon & Bro., Cedric, Liverpool, 40 cks., 120 bags.

PULPWOOD

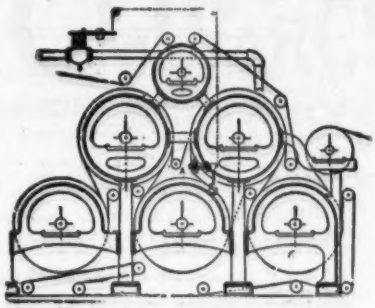
Chase National Bank, Hektor, Archangel, 2865 cords.
——, Grelisle, Archangel, 3504 cords.
——, Christian Bors, Archangel, 1737 cords.

WOOD PULP

Johanson, Wales & Sparre, Inc., Oscar II, Oslo, 210 bls. sulphite, 42 tons.
Castle & Overton, Inc., New York, Hamburg, 1121 bls. wood pulp, 167 tons.

(Continued on page 82)

The Pickles Drying Regulator



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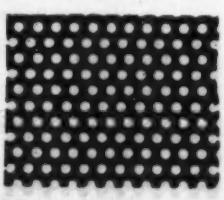

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COLLAPSIBLE WINDER SHAFTS

Acid Resisting Bronze

Special Machinery Built to Order

D. J. MURRAY MFG. CO.

WAUSAU, WIS.

Imports of Paper and Paper Stock

(Continued from page 80)

——, New York, Hamburg, 130 bls. wood pulp, 26 tons
M. Gottesman & Co., Inc., Hjelmaren, Stockholm, 1200 bls. sulphite.
Stora Kopperberg Corp., Hjelmaren, Skutskar, 2650 bls. wood pulp.
Pagel, Horton & Co., Inc., Hjelmaren, Gefle, 1250 bls. wood pulp.
Perkins, Goodwin & Co., Hjelmaren, Sundsvall, 1620 bls. sulphate; 1300 bls. sulphate.
Scandinavian Pulp Agency, Inc., Hjelmaren, Sundsvall, 250 bls sulphite.
Parsons & Whittemore, Inc., Hjelmaren, Sundsvall, 30 bls. wood pulp.
Johanson, Wales & Sparre, Inc., Hjelmaren, Sundsvalle, 1425 bls. sulphite.
Bulkley, Dunton & Co., Hjelmaren, ——, 5675 bls. wood pulp.
Irving Trust Co., Stavangerfjord, Oslo, 60 bls. wood pulp.
E. M. Sergeant & Co., Stavangerfjord, Oslo, 300 bls. wood pulp.
Atterbury Bros. Inc., Stavangerfjord, Drammen, 400 bls. sulphite.
A. P. W. Paper Co., Dago, Sheet Harbor, 6904 bls. wood pulp, 1548 tons.
G. S. Kerr, Aaro, St. Albans, 1508 cords wood pulp.
E. J. Keller Co., Inc., America., ——, 378 bls. wood pulp.

BOSTON IMPORTS

WEEK ENDING AUGUST 2, 1930

Bulkley, Dunton & Co., Hjelmaren, ——, 1875 bls. wood pulp.
Parsons & Whittemore, Inc., Hjelmaren, Gefle, 75 bls. sulphate.
Pagel, Horton & Co., Inc., Hjelmaren, Gefle, 500 bls. sulphate; 500 bls. sulphite.
Perkins, Goodwin & Co., Hjelmaren, Sundsvall, 1825 bls. sulphite.
Johanson, Wales & Sparre, Inc., Hjelmaren, Sundsvall, 1000 bls. sulphite.
G. F. Malcolm & Co., Cedric, Liverpool, 8 cs., tissue paper.
Katzenstein & Keene, Inc., Pipestone Co., Dunkirk, 37 bls. rags.
R. Bishop Manfg. Co., Pipestone Co., Dunkirk, 99 bls. rags.
Goldberg & Sons, Pipestone Co., Dunkirk, 21 bls. rags.
E. Butterworth & Co., Inc., Pipestone Co., Dunkirk, 156 rolls old rope.
T. D. Downing & Co., Pipestone Co., Havre, 1 cs. wall paper.
V Galaup, Pipestone Co., Havre, 18 bls. rags.
International Trust Co., Pipestone Co., Havre, 200 bls. bagging.
Goldberg & Son, Pipestone Co., Havre, 36 bls. rags.
Irving Trust Co., Pipestone Co., Havre, 53 bls. string waste.
Hollingsworth & Voose Co., Pipestone Co., Havre, 76 bls. bagging.
1st National Bank of Boston, Dakarian, Liverpool, 170 bags hide cuttings.
J. B. Moors & Co., Dakarian, Liverpool, 539 bags hide cuttings.
Baring Bros. & Co., Dakarian, Liverpool, 55 bls. old rope.
Baring Bros. & Co., Dakarian, Manchester, 102 bls. bagging; 67 bls. new cuttings; 85 bags old pickers; 98 bags hide cuttings.
E. Butterworth & Co., Inc., Dakarian, Manchester, 130 bls. old paper.
E. Buterworth & Co., Inc., Dakarian, Manchester, 437 bags hide cuttings.

PHILADELPHIA IMPORTS

WEEK ENDING AUGUST 2, 1930

J A. Steer & Co., Exminster, Genoa, 102 bls. rags.
J. A. Steer & Co., Exminster, Naples, 41 bls. rags.
E. Mayer, Saco, Rotterdam, 46 bls. rags.
International Trust Co., Saco, Rotterdam, 59 bls. bagging; 17 bls. rags.
Katzenstein & Keene, Inc., Saco, Rotterdam, 115 bls. rags.
E. J. Keller Co., Inc., Saco, ——, 123 bls. rags.
J. A. Steer & Co., MacKeesport, Dunkirk, 31 bls. rags.
Castle & Overton, Inc., MacKeesport, Havre, 40 bls. rags.
Warren Manfg. Co., MacKeesport, Havre, 94 bls. rags.
V. Galaup, MacKeesport, Havre, 64 bls. rags.
J. A. Steer & Co., Dakarian, Liverpool, 83 coils old rope.
Fueness, Withy & Co., Dakarian, Liverpool, 2 cs. drawing paper.
J. L. Vandiver, Dakarian, Manchester, 53 bls. old rope.
Congoleum Nairn Co., West Pocasset, Bordeaux, 117 bls. rags.
Philadelphia National Bank, West Pocasset, Bordeaux, 95 bls. rags.
Katzenstein & Keene, Inc., West Pocasset, Bordeaux, 114 bls. rags.
Philadelphia National Bank, West Pocasset, St. Nazaire, 325 bls. rags.
National Vulcanized Fibre Co., West Pocasset, St. Nazaire, 130 bls. rags.
Katzenstein & Keene, Inc., West Pocasset, St. Nazaire, 69 bls. rags.
E. J. Keller Co., Inc., West Pocasset, ——, 184 bls. rags
E J. Keller Co., Inc., Cabo, Mayor, ——, 72 bls. rags.
New York Trust Co., Cabo Mayor, Barcelona, 153 bls. rags.
S. E. Ingber, Cabo Mayor, Barcelona, 95 bls. rags.
National Vulcanized Fibre Co., Cabo Mayor, Barcelona, 44 bls. rags.
Philadelphia National Bank, Cabo Mayor, Barcelona, 392 bls. rags.
E. J. Keller Co., Inc., Buegerdyk, ——, 94 bls. rags.
E. J. Keller Co., Inc., Chemnitz, ——, 557 bls. wood pulp.

NORFOLK IMPORTS

WEEK ENDING AUGUST 2, 1930

New York Trust Co, Saco, Rotterdam, 143 bls. bagging.
New York Trust Co., Ambridge, Antwerp, 57 bls. bagging.
Chase National Bank, Cold Harbor, Manchester, 75 bls. bagging.

BALTIMORE IMPORTS

WEEK ENDING AUGUST 2, 1930

Castle & Overton, Inc., Saco, Rotterdam, 680 bls. wood pulp, 108 tons.
Brown Bros. & Co., Saco, Rotterdam, 47 bls. old rope.
Congoleum Nairn Co., Ambridge, Antwerp, 1537 bls. rags
Congoleum Nairn Co., West Pocasset, Bordeaux, 751 bls. rags.
Congoluem Nairn Co., West Pocasset, St. Nazaire, 47 bls. rags.

NEWPORT NEWS IMPORTS

WEEK ENDING AUGUST 2, 1930

Castle & Overton, Inc., Saco, Roterdam, 170 bls. wood pulp, 27 tons.

Plans for Power Development at Hudson Falls

[FROM OUR REGULAR CORRESPONDENT]

HUDSON FALLS, N. Y., August 4, 1930.—Engineers have finished a survey of the Hudson River near this village for the huge hydro-electric power development project planned by the New York Power and Light Corporation. Two plans are understood to be under consideration for harnessing the waters of the Hudson at this point. One plan calls for the construction of a large dam near the site of Bakers Falls while the other involves the building of a large dam near the property of the Union Bag and Paper Corporation.

It is said that the project calls for a power development of 100,000 horse power and paper mills in this vicinity will be benefitted. The development will entail a greater expenditure than the one now under way at Spiers Falls and it is said that work will be started before the end of the year. The Union Bag and Paper Corporation recently disposed of its power rights to the New York Power and Light Company.

Canals at Windsor Locks Closed

WINDSOR LOCKS, Conn., August 5, 1930.—The water is out of the canals this week the paper mills being either closed down or running on curtailed production. No large repairs are taking place. The canal banks are being examined to see if they need strengthening.

Harrisville Filing Folder Corp. Formed

[FROM OUR REGULAR CORRESPONDENT]

HARRISVILLE, N. Y., August 4, 1930.—A new concern to be known as the Harrisville Filing Folder Corporation has leased a plant here and plans to start operations within a few weeks. A section of the plant of the Harrisville Paper Company is to be occupied by the new firm and the work of installing machinery will be started this week. The company will turn out folders for filing cases and plans to enlarge its facilities as the business warrants. It is understood that the Harrisville Paper Company will furnish the raw materials for the new concerns. The Hano Paper Company of New York City is reported to hold the controlling interest in the new organization.

Cellophane Prices Again Reduced

The Du Pont Cellophane Company last week announced another reduction in the price of its patented product—Moistureproof Cellophane—made possible by the unusual acceptance of this material by the cigar industry during the last six months and by its indicated adoption as a wrap for frozen foods, nuts and other products.

Announcement was also made that a greater reduction would be made in the price of regular Cellophane than had been previously scheduled for this time.

This makes the ninth reduction in price since the domestic manufacture of Cellophane was started by the Du Pont Company.

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New York Market Review

Office of the PAPER TRADE JOURNAL,
Wednesday, August 6, 1930.

Considering the exceptionally warm weather experienced during the past week, the undertone of the local paper market was fairly strong. Demand for the various standard grades of paper was moderately active. Sales forces of the leading paper organizations are generally optimistic over the outlook for the balance of the year and expect more lively trading in the near future.

Production of news print is being maintained at approximately 71 per cent of capacity in British North America and the United States. The output is being freely absorbed by the newspaper publishers and stocks at the mills are not excessive. Shipments against contract are going forward in seasonal volume. Prices remain unchanged at previously recorded levels.

The position of the paper board market is practically unchanged. Demand for box board is fairly persistent for the time of year. The price situation is still unsatisfactory although an improvement in the Autumn is anticipated in some quarters. The fine paper market is exhibiting a steady trend with prices holding to schedule. The coarse paper market is irregular although summer specialties are in excellent request.

Mechanical Pulp

Dullness characterized the ground wood market during the past week. The contract movement, however, was fairly satisfactory for the time of year. Offerings of mechanical pulp are large enough to cover current requirements. Prices are generally holding to previously quoted levels and there is little talk of concessions around.

Chemical Pulp

The chemical pulp market was affected somewhat by the current business depression. Prices on several of the grades declined slightly. No. 1 imported strong unbleached sulphite is now quoted at from $2.30 to $2.65; Mitscherlich unbleached at from $2.40 to $2.85 and No. 2 strong unbleached at from $2.25 to $2.50, on dock, Atlantic ports. Domestic bleached sulphite is offered at from $2.65 to $4.75 and Mitscherlich at from $2.75 to $3.25, on dock, Atlantic ports.

Old Rope and Bagging

Trading in the old rope market was light and prices were easier. Foreign manila rope is now selling at from $3.00 to $3.15, f.o.b. New York. Domestic manila rope is steadier and is still quoted at from $3.50 to $3.75. Small mixed rope is in moderate demand. The bagging market was rather quiet. New burlap cuttings are now offered at from $2.25 to $2.50.

Rags

Demand for domestic rags was somewhat restricted. No. 2 new white shirt cuttings are now being offered at from $8.75 to $9.25; No. 1 silesias at from $7.00 to $7.25 and new unbleached at from $9.50 to 10.00. Roofing stock is exhibiting a stronger tone. Mixed rags have been fairly steady, due to curtailed collections. The imported rag market was decidedly dull and prices were easier.

Waste Paper

The board mills are displaying more interest in the lower grades of paper stock with the result that quotations are gradually becoming firmer. No. 1 mixed paper is exhibiting a stronger undertone than for some time past. The higher grades of waste paper are doing as well as expected at this time of the year. Soft white shavings are steady. Book stock is somewhat easier.

Twine

Most of the business transacted in the local twine market was along routine lines. Supplies are moving into consumption in a normal manner for the season. Prices are generally holding to formerly quoted levels. The industry is considered in good shape for expansion in the Fall by many close observers of the market.

Protest Chip Board Finding From Watertown

[FROM OUR REGULAR CORRESPONDENT]

WATERTOWN, N. Y., August 4, 1930.—Counsel for the New York Central and other railroad defendants has filed a brief with the Interstate Commerce Commission protesting against the recent finding of examiners that freight rates on chip board from this city to points in New England and the Middle West are excessive and unlawful. The case was instituted by the Hinde & Dauch Paper Company which alleged that the rates to such places as Cleveland, Sandusky, Ohio, Muncie, Ind., and Chicago were unreasonable, unjustly discriminatory and unduly prejudicial. The complainant requested the commission to establish rates the equivalent of eighty per cent of sixth class when a carload minimum weight of 36,000 pounds was used and sixty per cent when a minimum of 60,000 pounds was used, taking the class rates from Albany as a basis. Examiners found, however, that the rates were unreasonable to the extent they exceeded those applying on chipboard from Syracuse group points and recommended that the commission grant reparation for over-charges made on past shipments.

In the brief filed by Attorney Earl Calhoun considerable opposition is voiced to the award of reparation recommended by the examiners. He asserted that the recommendation was ambiguous and impracticable of application; it entirely disregards the very burdensome and expensive traffic conditions on the branch line of the New York Central in Northern New York and even goes so far as to propose a basis of rates which disregards and eliminates a portion of the mileage of the railroads over which the shipments of chipboard involved have to be hauled. The brief concludes by requesting the commission to dismiss the action and to permit the carriers to establish rates on chipboard which will be ninety per cent of the new sixth class rate prescribed by the commission in its recent eastern class rate investigation decision.

Fort Edward Mill Increases Time Schedule

[FROM OUR REGULAR CORRESPONDENT]

FORT EDWARD, N. Y., August 4, 1930.—The shipping departments of the International Paper Company returned to full time schedules this week while the paper machines continued to operate four days. Inasmuch as the bond paper business is showing improvement it is understood that all departments will again be running at capacity within a few weeks. It was also announced that A. C. Gault, who has been supervising activities, had been transferred to the branch at Piercefield for a period of three months. During his absence Richard Buckley will officiate as general manager of the local mill.

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76%—Solid Liquid Flake
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PHILADELPHIA CHARLOTTE

Miscellaneous Markets

Office of the PAPER TRADE JOURNAL,
Wednesday, August 6, 1930.

BLANC FIXE.—Trading in the blanc fixe market was moderately active. Contract shipments were fairly heavy. Prices remain unchanged. The pulp is quoted at from $42.50 to $45.00 per ton, in bulk, while the powder is selling at from 3¼ cents to 4½ cents per pound, in barrels, at works.

BLEACHING POWDER.—The bleaching powder market exhibited a steady trend. Shipments against contract are proceeding at a satisfactory pace for the time of the year. Prices are holding to schedule. Bleaching powder is quoted at from $2.00 to $2.53 per 100 pounds, in drums, at works.

CASEIN.—Demand for casein was rather light. Prices remain unchanged. Domestic standard ground is quoted at 13½ cents and finely ground at 15 cents per pound. Argentine standard ground is selling at 13½ cents and finely ground at 14½ cents per pound, all in bags, car lot quantities.

CAUSTIC SODA.—The caustic soda market was affected by the prevailing summer dullness and trading was restricted. Solid caustic soda is still quoted at from $2.90 to $2.95, while the flake and the ground are selling at from $3.30 to $3.33 per 100 pounds, in large drums, at works.

CHINA CLAY.—Steadiness prevails in the china clay market. Demand is fairly persistent and prices are holding to previously quoted levels. Imported china clay is quoted at from $15 to $25 per ton, ship side, while domestic paper making clay is selling at from $8 to $13 per ton, at mine.

CHLORINE.—The chlorine market continues to rule practically unchanged. Supplies are moving into consumption in fair volume for the season. Chlorine is still quoted at from $2.40 to $2.45 per 100 pounds, in tanks, or multi-unit cars, in ton lots, or over, at works.

ROSIN.—There were no radical changes reported in the rosin market. Prices are easy. The grades of gum rosin used in the paper mills are quoted at from $5.55 to $5.60 per 280 pounds, in barrels, at yard. Wood rosin is selling at from $4.25 to $4.50 per 280 pounds, in barrels, at works.

SALT CAKE.—Contract shipments of salt cake are going forwards to the paper mills in satisfactory volume for the season. Prices remain unchanged. Salt cake is quoted at from $22 to $25 per ton, while chrome salt cake is selling at from $20 to $21 per ton, in bulk, at works.

SODA ASH.—Demand for soda ash is rather restricted at present. The industry, however, is in a sound position for the time of year. Prices are holding to schedule, in most instances. Contract quotations on soda ash, in car lots, at works, are as follows: in bags, $1.32½, and in barrels, $1.55.

STARCH.—Conditions in the starch market are satisfactory. The contract movement is well up to average. Prices are generally being maintained at previously quoted levels. Special paper making starch is quoted at $3.72 in bags, and at $3.99 per 100 pounds, in barrels.

SULPHATE OF ALUMINA.—Supplies of sulphate of alumina are moving into consumption in fairly satisfactory volume. Prices are holding to schedule. Commercial grades are quoted at from $1.40 to $1.55 and iron free at from $1.90 to $2.05 per 100 pounds, in barrels, at works.

SULPHUR.—The sulphur market is exhibiting a strong undertone. Sulphur is still quoted at $18 per ton, at mine, on orders of 1,000 tons, or over, on yearly contracts, and at $20 per ton for any smaller quantity over that period. On spot and nearby car loads, the quotation is $21 per ton.

TALC.—Most of the business transacted in the local talc market was along routine lines. Prices are holding to formerly quoted levels. Domestic talc is selling at from $16 to $18 per ton, at eastern mines, while imported talc is offered at from $18 to $20 per ton, in bags, ship side.

Market Quotations

Paper

(F. o. b. Mill)

Ledgers	11.00	@	38.00
Bonds	9.00	@	53.25
Writings—			
Extra Superfine	14.00	@	32.00
Superfine	14.00	@	32.00
Tub sized	10.00	@	15.00
Engine sized	8.00	@	11.00
Book, Cased—			
S. & S. C.	6.00	@	7.50
M. F.	5.75	@	7.00
Coated and Enamel	7.50	@	12.00
Lithograph	7.50	@	12.00
Tissues—Per Ream—			
White No. 1	.75	@	1.00
Anti-Tarnish	1.35	@	1.90
Colored	1.00	@	2.00
White No. 2	.75	@	.80
Kraft	1.00	@	1.10
Manila	.75	@	.80
Kraft—			
No. 1 Domestic	5.75	@	6.25
No. 2 Domestic	3.75	@	5.00
Southern	3.75	@	4.75
Imported	6.50	@	7.00
Manila—			
No. 1 Jute	9.00	@	9.25
No. 2 Jute	7.75	@	8.50
No. 1 Wood	4.75	@	5.25
No. 2 Wood	4.00	@	4.50
Butchers	3.75	@	4.25
Fibre Papers—			
No. 1 Fibre	5.00	@	5.50
No. 2 Fibre	4.75	@	5.25
Common Bogus	2.75	@	3.00
Screenings	3.00	@	3.25
Card Middles	4.00	@	5.00
Glassine—			
Bleached, basis 25 lbs.	13.00	@	16.00
Bleached, basis 20 lbs.	15.00	@	16.00
(Delivered New York)			
News, per ton—			
Rolls, contract	62.00	@	—
Rolls, spot	62.00	@	—
Sheets	67.00	@	—
Side Runs	47.00	@	52.00
Boards—per ton—			
News	37.50	@	—
Straw	44.00	@	—
Chip	35.00	@	—
Binders' Boards	65.00	@	70.00
Wood Pulp	90.00	@	95.00
65 Test Jute Liner	37.50	@	40.00
85 Test Jute Liner	42.50	@	45.00
Sgl. Mla. Ll. Chip.	47.50	@	50.00

Mechanical Pulp

(On Dock)

No. 1 Imported—			
Moist	28.00	@	30.00
Dry	30.00	@	32.00
(F. o. b. Mill)			
No. 1 Domestic	26.00	@	30.00

Chemical Pulp

(On Dock, Atlantic Ports)

Sulphite (Imported)—			
Bleached	3.00	@	4.25
Easy Bleaching	2.70	@	2.90
No. 1 strong unbleached	2.30	@	2.65
Mitscherlich unbleached	2.40	@	2.85
No. 2 strong unbleached	2.45	@	2.50
No. 1 Kraft	1.65	@	2.15
No. 2 Kraft	1.55	@	1.85
Sulphate—			
Bleached	3.40	@	3.85
(F. o. b. Pulp Mill)			
Sulphite (Domestic)—			
Bleached	2.65	@	4.75
Easy Bleaching Sulphite	2.55	@	2.85
News Sulphite	2.35	@	2.60
Mitscherlich	2.75	@	3.25
Kraft (Domestic)	2.10	@	3.30
Soda Bleached	2.90	@	3.20

Domestic Rags

New Rags

(Prices to Mill f. o. b N. Y.)

Shirt Cuttings—			
New White, No. 1	9.00	@	9.50
New White, No. 2	8.75	@	9.25
Silesias No. 1	7.00	@	7.25
New Unbleached	9.50	@	10.00
New Blue Prints	5.25	@	5.50
New Soft Blacks	5.25	@	5.75
Blue Overall	7.00	@	7.50
Washables	4.50	@	5.00
Fancy	5.25	@	5.75
Mixed Khaki Cuttings	4.75	@	5.25
Pink Corset Cuttings	8.00	@	8.50
O D. Khaki Cuttings	5.15	@	5.75
Men's Corduroy	3.75	@	4.25
New Mixed Blacks	3.50	@	3.75
Old Rags			
White, No. 1—			
Repacked	5.50	@	6.00
Miscellaneous	4.50	@	5.00
White, No. 2—			
Repacked	3.00	@	3.50
Miscellaneous	2.50	@	2.75
St. Soiled, White	2.00	@	2.15
Thirds and Blues—			
Repacked	2.25	@	2.50
Miscellaneous	1.75	@	2.00
Black Stockings	3.25	@	3.75
Roofing Rags—			
Cloth Strippings	1.50	@	1.60
No. 1	1.50	@	1.60
No. 2	1.15	@	1.25
No. 3	1.10	@	1.20
No. 4	1.00	@	1.10
No. 5A	.90	@	1.05

Foreign Rags

New Rags

New Dark Cuttings	2.50	@	3.00
New Mixed Cuttings	2.25	@	2.75
New Light Silesias	6.75	@	7.00
Light Flannelettes	6.75	@	7.25
Unbleached Cuttings	9.25	@	9.75
New White Cuttings	9.00	@	9.50
New Light Oxfords	7.00	@	7.50
New Light Prints	5.25	@	5.75
Old Rags			
No. 1 White Linens	7.25	@	8.00
No. 2 White Linens	5.75	@	6.75
No. 3 White Linens	4.75	@	5.25
No. 4 White Linens	3.00	@	3.50
No. 1 White Cotton	5.50	@	6.25
No. 2 White Cotton	4.50	@	5.00
No. 3 White Cotton	3.00	@	4.00
No. 4 White Cotton	1.75	@	2.10
Extra Light Prints	2.75	@	3.00
Ord. Light Prints	2.15	@	2.40
Med. Light Prints	1.80	@	2.00
Dutch Blue Cottons	2.15	@	2.30
French Blue Linens	2.65	@	2.75
German Blue Linens	2.30	@	2.50
German Blue Cottons	1.90	@	2.00
Checks and Blues	1.75	@	1.90
Lindsay Garments	1.30	@	1.40
Dark Cottons	1.00	@	1.10
Old Shopperies	.90	@	1.00
New Shopperies	1.20	@	1.25
French Blues	1.95	@	2.05

Old Rope and Bagging

(Prices to Mill f. o.b. N. Y.)

Gunny No. 1—			
Foreign	1.65	@	1.75
Domestic	1.65	@	1.75
Wool Tares, light	1.60	@	1.65
Wool Tares, Heavy	1.60	@	1.70
Bright Bagging	1.60	@	1.70
Small Mixed Rope	1.25	@	1.40
Manila Rope—			
Foreign	3.00	@	3.25
Domestic	3.50	@	3.75
New Burlap Cut	2.25	@	2.50
Hessian Jute Threads—			
Foreign	3.50	@	4.00
Domestic	3.25	@	3.50

Old Waste Papers

(F. o. b. New York)

Shavings—			
Hard, white, No. 1	3.00	@	3.25
Hard, white, No. 2	2.40	@	2.55
Soft, white, No. 1	2.65	@	2.75
White envelope cuttings	2.90	@	3.10
Flat Stock—			
Stitchless	1.30	@	1.40
Overissue Mag.	1.30	@	1.40
Solid Flat Book	1.20	@	1.30
Crumpled No. 1	.80	@	.90
Solid Book Ledger	2.00	@	2.10
Ledger Stock	1.30	@	1.40
New B. B. Chips	.35	@	.45
Manilas—			
New Env. Cut.	2.40	@	2.60
New Cuttings	1.50	@	1.75
Extra No. 1 old	1.25	@	1.35
Print	.60	@	.65
Bogus Wrapper	.60	@	.65
Container	.40	@	.50
Old Kraft Machine—			
Compressed bales	1.50	@	1.60
News—			
No. 1 White News	1.77	@	1.87
Strictly Overissue	.50	@	.55
Strictly Folded	.40	@	.45
No. 1 Mixed Paper	.22	@	.27
Common Paper	.15	@	.20

You can regrind the seating surface of these
BRONZE GLOBE AND ANGLE VALVES
without removing them

The Eastwood "Perfection" Globe and Angle Valves are practically indestructible. This is because you can remove seating surface, when it shows signs of wear after long service, and regrind. The valve itself stays in the line. *All* parts are renewable, including the disc and seat ring. Maintenance costs are very low.

This valve is of the outside screw type. Can be replaced under pressure with valve wide open. Threads are easily oiled.

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"American Paper Made on American Wires"

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ON SHORTEST POSSIBLE NOTICE
We make all kinds of Mill Cogs and have special facilities that will be of great service to you. We make a specialty of "ready dressed" cogs which are
READY TO RUN
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TWO LEADING AMERICAN CLAYS
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EDGAR CLAYS ARE THE RESULT OF ALMOST A HALF CENTURY OF EXPERIENCE IN WASHING CLAYS.

TECHNICAL SERVICE AVAILABLE BOTH FOR COATING AND LOADING WITHOUT CHARGE.

Send for Samples

EDGAR BROS. CO.
50 Church St. Hudson Terminal Bdlg.
New York City

Twines
(F. o. b. Mill)

Cotton—			
No. 1	.39	@	.40
No. 2	.37	@	.38
No. 3	.36	@	.37
B. C., 18 basis	.38	@	.40
A. B. Italian, 18 basis	.48	@	.53
Finished Jute—			
Dark 18 basis	.24	@	.25
Light 18 basis	.27	@	.28
Jute Wrappings, 3-6 Ply—			
No. 1	.19	@	.21
No. 2	.18	@	.20
Tube Rope—			
4-ply and larger	.16	@	.17
Fine Tube Yarn—			
5-ply and larger	.21	@	.25
4-ply	.25	@	.29
3-ply	.28	@	.32
Unfinished India—			
Basis	.13	@	.14
Paper Makers Twine			
Balls	.11	@	.12
Box Twine, 2-3 ply	.15	@	.17
Jute Rope	.17	@	.19
Amer. Hemp, 6	.29	@	.31
Sisal Hay Rope—			
No. 1 Basis	.16	@	.18
No. 2 Basis	.14	@	.16
Sisal Lath Yarn—			
No. 1	.14	@	.16
No. 2	.12	@	.14
Manila Rope	.22	@	.24

CHICAGO

Paper
(F. o. b. Mill)

Rag Bond	.30	@	.53¼
Water Marked Sulphite Bond	.09	@	.12
Sulphite Bond	.06¾	@	.11
Superfine writing	.18	@	.24
No. 1 fine writing	.14	@	.18
No. 2 fine writing	.12	@	.14
No. 3 fine writing	.08½	@	.12
No. 1 M. F. Book	.06½	@	.07¼
No. 2 M. F. Book	.05¼	@	.06¾
No. 1 S.&S.C. Book	.06¾	@	.07¾
No. 2 S.&S.C. Book	.05¾	@	.06½
Coated Book	.07½	@	.12
Coated Label	.07½	@	.10
No. 1 Manila	.04¼	@	.05¾
No. 1 Fibre	.04¼	@	.05¾
No. 2 Manila	.04¼	@	.04¾
Butcher's Manila	.04	@	.04½
No. 1 Kraft	5.00	@	5.50
Southern Kraft	3.75	@	4.00
No. 2 Kraft	3.75	@	4.00
Wood Tag Boards	.04¼	@	.06½
Sulphite Sreenings	.03	@	.03¾
Manila Tissue—			
24x36 Sheet	.07	@	.07¼
White Tissue—			
20x30 Sheet	.07¼	@	.07½

(Delivered Central Territory)

News, per ton—			
Rolls, contract	62.00	@	—
Sheets	67.00	@	—
Boards, per ton—			
Plain Chip	37.50	@	42.50
Solid News	47.50	@	—
Solid News	40.00	@	45.00
Manila Lined Chip	50.00	@	55.00
Container Lined—			
85 Test	65.00	@	70.00
100 Test	70.00	@	—

Old Papers
(F. o. b. Chicago)

Shavings—			
No. 1 Hard White	2.35	@	2.40
White Env. Cut			
No. 1 Soft Shavings	2.10	@	2.15
No. 1 Mixed	.30	@	.35
No. 2 Mixed	.25	@	.35
Ledger & Writings	1.25	@	1.35
Solid Books	1.05	@	1.10
Blanks	1.60	@	1.65
Krafts	1.30	@	1.40
New Kraft Cuts	1.50	@	1.70
Manila Envelope Cuttings	1.65	@	1.70
Ex. No. 1 Manila	1.30	@	1.45
Print Manila	.45	@	.50
Folded News (over-issue	.40	@	.45
Old Newspapers—			
No. 1	.35	@	.40
No. 2	.30	@	.35
Mixed Papers—			
No. 1	.30	@	.35
Roofing Stocks—			
(F. o. b. Chicago, net cash)			
No. 1	30.00	@	—
No. 2	28.00	@	—

PHILADELPHIA

Paper
(F. o. b. Mill)

Bonds	.05	@	.40
Ledgere	.08	@	.40
Writings—			
Superfine	.12½	@	.18
Extra fine	.18	@	.22
Fine	.17	@	.26
Fine, No. 2	.15	@	.25
Fine, No. 3	.09	@	.20
Book, M. F.	.05	@	.07
Book, S. S. & C.	.05	@	.07½
Book, Coated	.09	@	.16
Coated Lithograph	.07	@	.11
Label	.07	@	.11
No. 1 Jute Manila	.07	@	.09
Manila Sul., No. 1	.03½	@	.05½
Manila No. 2	.03	@	.04
No. 1 Kraft	.05¾	@	.06¾
No. 2 Kraft	.03¾	@	.04¾
Southern Kraft No. 1	—	@	.03¾
Southern Kraft No. 2	—	@	.03½
Common Bogus	.03¼	@	.04

(Delivered Philadelphia)

News Print Rolls	62.00	@	—
Straw Board	52.50	@	70.00
News Board	37.50	@	38.50
Chip Board	32.50	@	35.00
Wood Pulp Board	85.00	@	95.00
Binder Boards—			
No. 1, per ton	75.00		
No. 2, per ton	70.00		
Carload lots	68.00	@	70.00
Tarred Felts—			
Regular	55.50	@	57.00
Slaters (per roll)	.84	@	.94
Best Tarred, 1-ply (per roll)	1.95	@	2.10
Best Tarred, 2-ply (per roll)	1.50	@	1.60
Best Tarred, 3-ply	2.00	@	2.25

Domestic Rags (New)
(Price to Mill, f. o. b. Phila.)

Shirt Cuttings—			
New White, No. 1	.10½	@	.11
New White, No. 2	.07	@	.07½
Light Silesias	.07	@	.07½
Silesias, No. 1	.07	@	.09
Black Silesia, soft	.05	@	.05½
New Unbleached	.10½	@	.11
Washable, No. 1	.04½	@	.05
Blue Overall	.07½	@	.08
Cottons—According to grades—			
Washable, No. 2	.03	@	—
New Blue	.03	@	.03½
Fancy	.05½	@	.06
New Black Soft	.05	@	.05¼
New Light Seconds	.02½	@	.03
New Dark Seconds	1.85	@	2.00
Khaki Cuttings—			
No. 1 O. D.	.05½	@	.05¾
No. 2 Mixed	.04½	@	.04¾
Corduroy	.03	@	.03½
New Canvas	.08½	@	.09
New Black Mixed	.03¾	@	.04½

Bagging
(F. o. b. Phila.)

Gunny, No. 1—			
Foreign	1.50	@	1.60
Domestic	1.75	@	—
Manila Rope	3.50	@	4.00
Sisal Rope	1.50	@	—
Mixed Rope	1.10	@	1.25
Scrap Burlaps—			
No. 1	1.50	@	1.60
No. 2	1.10	@	1.20
Wool Tares, heavy	3.00	@	—
Mixed Strings	1.15	@	1.25
No. 1, New Light Burlap	2.50	@	2.75
New Burlap Cuttings	2.00	@	2.25

Old Papers
(F. o. b. Phila.)

Shavings—			
No. 1 Hard White	2.65	@	2.75
No. 2 Hard White	2.30	@	2.50
No. 1 Soft White	2.25	@	2.50
No. 2 Soft White	1.40	@	1.60
No. 1 Mixed	.90	@	1.00
No. 2 Mixed	.60	@	.70
Solid Ledger Stock	1.55	@	1.65
Writing Paper	1.05	@	1.25
No. 1 Books, heavy	1.00	@	1.20
No. 2 Books, light	.90	@	1.00
No. 1 New Manila	2.15	@	2.30
No. 1 Old Manila	1.50	@	1.60
Print Manila	.50	@	.60
Container Manila	.45	@	.50
Old Kraft	1.35	@	1.40
Common Paper	.25	@	.35
No. 1 Mixed Paper	.25	@	.30
Straw Board, Chip	.35	@	.40
Binders Board, Chip	.35	@	.45
Corrugated Board	.50	@	.60
Overissue News	.45	@	.50
Old Newspaper	.25	@	.30

Domestic Rags (Old)

White No. 1—			
Repacked	4.25	@	4.50
Miscellaneous	3.50	@	3.75
M. G.	6.00	@	—
Thirds and Blues—			
Repacked	2.00	@	2.25
Miscellaneous	1.60	@	1.80
Black Stockings (Export)	3.90	@	4.25
Roofing Stock—			
Foreign No. 1	1.25	@	1.30
Repacked	.80	@	.90
No. 2	.70	@	.75
No. 3 (Roofing)	.30	@	.40
No. 4	.30	@	.40
No. 5A	.70	@	.75
B	.40	@	.60
C	.25	@	.30

BOSTON

Paper
(F. o. b. Mill)

Ledgers—			
Sulphite	.07½	@	.12½
Rag content	.15	@	.30
All rag	.38	@	.52½
Bonds—			
Sulphite	.06½	@	.11½
Rag content	.15	@	.30
All rag	.36½	@	.65
Writings	.06½	@	.20
Superfines	.11	@	.31
Book, Super	.06	@	.09
Book, M. F.	.05½	@	.08½
Book, Coated	.08½	@	.18
Coated Litho	.09	@	.12
Label	.09½	@	.15
Jute Manila No. 1	.11	@	.13
Manila, Sul. No. 1	.04¾	@	.06½
Manila, Sul. No. 2	.03¾	@	.04½
No. 1 Kraft	.04¾	@	.06
No. 2 Kraft	.03¾	@	.05
(Less car-freight to Boston)			
Southern Kraft	.03¾	@	.04¾

(F. o. b. destination in carload lots, f. o. b. mill in less than carload lots.)

Common Bogus	.02	@	.02¾

Delivered New England points

News Print Rolls	61.50	@	—
Straw Boards, rolls	.009		52.50
Straw Board in Sheets, basis 35s to 70s	54.50	@	55.00
Filled News Board	37.50	@	40.00
Chip Board	35.00	@	37.50
Single Manila Lined Chip	47.50	@	52.50
Single White, Patent Coated Newsboard Bender	65.00	@	80.00
Wood Pulp Board	75.00	@	80.00
Binder Boards	70.00	@	75.00

(F. o. b. Mill)

Tarred Felts—			
Regular, carload lots	65.00	@	—

Old Papers
(F. o. b. Boston)

Shavings—			
No. 1 Hard White	3.25	@	3.75
No. 2 Hard White	2.60	@	2.90
No. 1 Soft White	2.50	@	2.60
No. 1 Mixed	1.10	@	1.15
No. 2 Mixed	.85	@	.90
Solid Ledger Stock	—	@	2.25
No. 1 Books, Heavy	1.30	@	—
No. 1 Books, Light	1.05	@	—
Manila Env. Cuttings	2.00	@	2.25
No. 1 Old Manila	.90	@	1.00
White Blank News	1.50	@	1.60
Old Kraft	1.35	@	1.45
Print Manila	.75	@	.80
No. 1 Mixed Paper	.20	@	—
Overissue News	.40	@	.50
Old Newspapers	.35	@	.40
Box Board, Chip	.45	@	.50
Corrugated Boxes	—	@	.40

Bagging
(F. o. b. Boston)

Gunny No. 1—			
Foreign	1.50	@	1.65
Domestic	1.50	@	—
Manila Rope—			
Foreign	—	@	3.00
Domestic	3.50	@	—
Transmission Rope	2.25	@	2.40
Mixed Strings	.90	@	1.00
Jute Wool Strings	.90	@	1.00
Jute Carpet Threads	1.05	@	1.15
Scrap Burlaps	1.25	@	1.40
Scrap Sisal	1.50	@	1.75
Scrap Sisal for shredding	1.75	@	2.00
Wool Tares, heavy	1.60	@	—
New Burlap Cutting	1.75	@	2.00
Australian Wool Pouches	2.50	@	3.00

Domestic Rags (New)
(F. o. b. Boston)

Shirt Cuttings—			
New White No. 1.	.08	@	.08½
Silesias No. 1	.06	@	.06¾
New Unbleached	—	@	.09¼
Fancy	.04	@	.04½
Washable	.04	@	.04½
Cottons—According to grades			
Blue Overalls	.06¼	@	.06¾
New Black, soft	.04	@	.04¼
Khaki Cuttings	.04	@	.04¾
O. D. Khaki	.05	@	—
Corduroy	.03	@	.03½
New Canvas	.08	@	.08½

Domestic Rags (Old)
(F. o. b. Boston)

Canvas	.04½	@	—
White No. 1—			
Repacked	4.75	@	5.25
Miscellaneous	5.00	@	—
White No. 2—			
Repacked	.04½	@	.05
Miscellaneous	.03½	@	.04
Twos and Blues	2.75	@	3.00
Thirds and Blues—			
Repacked	2.25	@	2.50
Miscellaneous	1.75	@	1.90
Black Stockings	—	@	4.00
Roofing Stock—			
No. 1	1.25	@	1.50
No. 2	.90	@	1.00
No. 3	.85	@	.90
No. 4	.75	@	.85

Foreign Rags
(F. o. b. Boston)

Dark Cottons	.85	@	.95
New No. 1 Shirt Cuttings	8.50	@	9.00
Dutch Blues	2.00	@	2.12½
Lace Curtains	4.50	@	4.75
New Checks & Blues	4.25	@	4.60
Old Fustians	1.90	@	2.00
Old Linsey Garments	1.20	@	—

TORONTO

(Delivered Toronto)

Paper
(F. o. b. Mill)

Bond—			
No. 1 Sulphite	.12½	@	—
No. 2 Sulphite	.10¾	@	—
No. 1 Colored	.13½	@	—
No. 2 Colored	.11¾	@	—
Ledgers (sulphite)	—	@	—
Ledgers, No. 1	.36	@	—
Ledgers, No. 2	.27	@	—
Writing	.09½	@	.10
Book—			
No. 1 M. F. (carloads)	7.50	@	—
No. 2 M. F. (carloads)	7.25	@	—
No. 3 M. F. (carloads)	7.00	@	—
No. 1 S. C. (carloads)	8.00	@	—
No. 2 S. C. (carloads)	7.75	@	—
No. 3 S. C. (carloads)	7.50	@	—
No. 1 Coated and Litho	13.25	@	—
No. 2 Coated and Litho	12.25	@	—
No. 3 Coated and Litho	10.00	@	11.50
Coated tinted	14.50	@	—
Wrapping—			
Rag Brown	4.95	@	—
White Wrap	5.25	@	—
"B" Manila	5.00	@	—
No. 1 Manila	5.40	@	—
Fiber	5.40	@	—
Kraft, M. F.	5.90	@	—
White, No. 2	2.00	@	2.25

News, per ton—			
Rolls (contract)	61.50	@	62.00
Sheets	67.00	@	—

Pulp
(F. o. b. Mill)

Ground Wood	30.00	@	32.00
Sulphite easy bleaching	60.00	@	—
Sulphite news grade	60.00	@	—
Sulphite, bleached	72.50	@	75.00
Sulphate	60.00	@	—

Old Waste Paper
(In carload lots, f. o. b. Toronto)

Shavings—			
White Env. Cut	3.00	@	—
Soft White Book Shavings	2.85	@	—
White Blk. News	1.60	@	—
Book and Ledger—			
Flat Magazine and Book Stock (old)	1.40	@	—
Light and Crumpled Book Stock	1.25	@	—
Ledgers and Writ-Solid Ledgers	1.50	@	—
Manilas—			
New Manila Cut	1.50	@	—
Printed Manilas	1.00	@	—
Kraft	2.25	@	—
News and Scrap—			
Strictly Overissue	.85	@	—
Strictly Folded	.85	@	—
No. 1 Mixed Paper	.65	@	—

Domestic Rags
(Price to mills, f. o. b. Toronto)

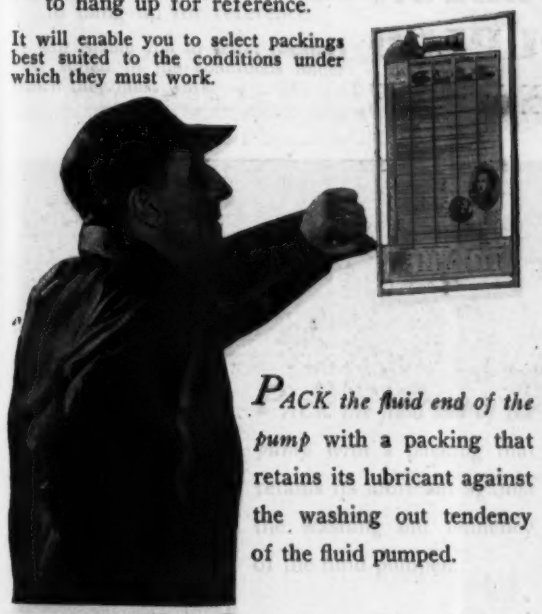
No. 1 White Shirt Cuttings	.09¼	@	.10
Fancy Shirt Cuttings	.06	@	.06¼

Advertising matter paged consecutively with text, has been removed here to lessen the bulk of this volume.

Select Packings Intelligently

Send for this "A.B.C." Chart
to hang up for reference.

It will enable you to select packings best suited to the conditions under which they must work.



PACK the fluid end of the pump with a packing that retains its lubricant against the washing out tendency of the fluid pumped.

For Steam Superheat and Compressed Air

For Water (Hot and Cold) Calcium Brine, Centrifugal and Reciprocating Pumps.

For Caustic Soda, Acids, Alkalis.

For Gasoline, Naphtha and all Distillates of Petroleum.

To prove our claims for long satisfactory service, let us send you without charge or obligation working samples of these packings to test under your own conditions. State condition of service and size packing desired.

To avoid shaft friction, a packing must have sufficient lubricant, and the lubricant must be such as will resist the washing out tendency of the fluid it comes in contact with.

The packings listed on this chart are designed to give long, satisfactory service under indicated conditions.

GREENE, TWEED & CO.

Sole Manufacturers

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Greene, Tweed & Co.
109 Duane St., New York, N. Y.
Please mail me a copy of your "A.B.C." Chart.

Name .....
Position .....
Firm .....
Address 12

PAPER TRADE JOURNAL

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THE INTERNATIONAL WEEKLY OF THE PAPER AND PULP INDUSTRY AND THE PIONEER PUBLICATION IN ITS FIELD

FIFTY-NINTH YEAR

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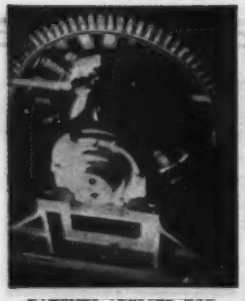

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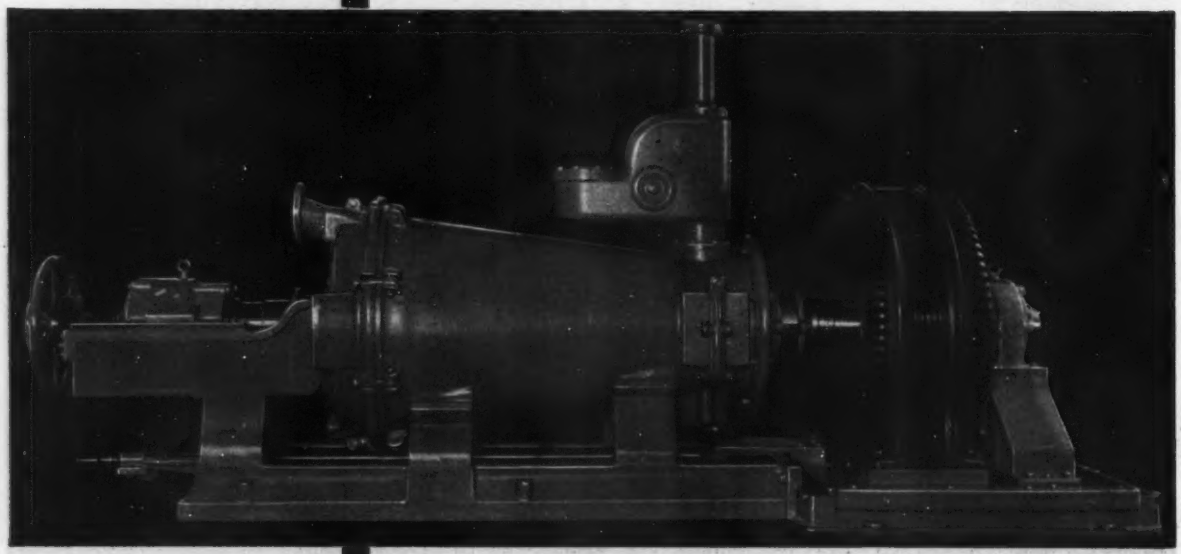
•THE APPLETON CLOSE-COUPLED JORDAN ENGINE



25% Shorter

Mounting the motor direct on the shaft makes the Appleton Close-Coupled Jordan 25% shorter than the direct connected type with a flexible coupling transmission. Four or five extra feet are gained in which to pull the plug making this Jordan more adaptable to install, especially in limited floor space. Mills that are speeding up production or changing to grades of paper demanding increased refining capacity often find themselves cramped for room in which to install additional Jordans. They will appreciate the advantage of this shorter Jordan. Mounting the motor direct on the shaft close to the power load eliminates the flexible coupling and provides a more efficient and a more profitable power application. These are important factors that contribute directly to the superior operating performance possible with the Appleton Close-Coupled Jordan.

• THE APPLETON MACHINE COMPANY

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